

***United States Court of Appeals
for the Second Circuit***



APPENDIX

75-7621
75-7645

No. 75-7621

No. 75-7645

IN THE
United States Court of Appeals
FOR THE SECOND CIRCUIT

PLANTRONICS, INC.,

*Plaintiff-Appellant
and Cross-Appellee,*

v.

ROANWELL CORPORATION,

*Defendant-Appellee
and Cross-Appellant,*

APPEAL FROM THE UNITED STATES DISTRICT COURT
FOR THE SOUTHERN DISTRICT OF NEW YORK

JOINT APPENDIX VOL. I (PAGES 1-566)

TOM ARNOLD
PAUL M. JANICKE
ARNOLD, WHITE AND DURKEE

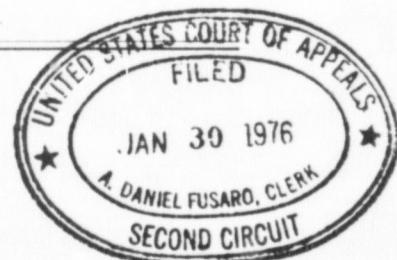
200 Transco Tower
Houston, Texas 77027
(713) 621-9100

Attorneys for Plantronics

Of Counsel:

ROBERT NEUNER
BRUMBAUGH, GRAVES, DONOHUE AND RAYMOND

30 Rockefeller Plaza
New York, New York 10020
(212) 489-3300



PAGINATION AS IN ORIGINAL COPY

APPENDIX

CONTENTS

<u>Volume</u>	<u>Description of Item</u>	<u>Page</u>
I	1. Relevant District Court Docket Entries.....	ii-iii
I	2. Amended Complaint.....	1
I	3. Amended Answer.....	5
I	4. Roanwell's Notices of Prior Art.....	14
I	5. Chognard's Responses to Written Questions Concerning Statutory Bars to a British Counterpart Application to Larkin U.S. Patent 3,184,556.....	22
I	6. Plantronics' Motion to Strike Roanwell's Defense and Counterclaim of Unenforceability of the Larkin Patent Due to Alleged Foreign Activities.....	27
I	7. Roanwell's Memorandum Opposing Plantronics' Motion to Strike.....	40
I	8. Plantronics' Reply to Roanwell's Memorandum Opposing Plantronics' Motion to Strike.....	56
I	9. District Court Memorandum Opinion and Order Granting Plantronics' Motion to Strike.....	59
I	10. Joint Statement of Agreed Facts.....	61
I	11. Plantronics' Summaries of Depositions...	158
I-II	12. Transcript of Trial (corrected per stipulation).....	178
II	13. Post-Trial Stipulations.....	1055
II	14. District Court Opinion (amended by nunc pro tunc orders).....	1063
II	15. District Court Judgment.....	1127

RELEVANT DOCKET ENTRIES

<u>Date</u>	<u>Docket Entry</u>
10/12/72	Filed Plaintiff's First Amended and Supplemental Complaint. Issued Summons
10/18/72	Filed Answer to Plaintiff's First Amended and Supplemental Complaint
10/7/74	Filed defendant's notice under 35 U.S.C. 282
10/15/74	Filed defendant's notice of additional prior art
11/ 6/74	Filed responses to written questions by Jean C. Chognard
11/11/74	Filed further response by Jean C. Chognard to written question No. 6
2/ 7/75	Filed defendant Roanwell Corp. notice of prior art
2/13/75	Filed plaintiff's motion for an order granting partial judgment and narrowing issues
2/19/75	Filed defendant's memorandum in opposition to plaintiff's motion for an order granting partial judgment and narrowing issues
2/24/75	Filed plaintiff's reply to defendant's memorandum in opposition to plaintiff's motion for an order granting partial summary judgment and narrowing issues
3/12/75	Filed deposition summary of Merlin W. Leonhardt
3/12/75	Filed plaintiff's summaries of depositions
3/12/75	Filed statement of agreed facts
3/18/75	Filed Memorandum Opinion #42062 and Order--for the reason stated, the motion to strike is granted. So ordered--Conner, J.
5/14/75	Filed stipulation and order that the attached Pacific Plantronics, Inc. "Third Quarter Report to Stockholders" for the nine months ending 2/28/69 may be received in evidence as plaintiff's exhibit 155, as indicated. So ordered--Conner, J.

Date

Docket Entry

5/19/75 Filed transcript of record of proceedings, dated March 17, 18, 19, 20, and 21, 1975

6/24/75 Filed stipulation and order that during trial a question was raised regarding the purchase date of a certain Oticon hearing aid--that the attached documents are the only documents which relate to a trip by Plantronics personnel to San Francisco to purchase hearing aids or cases around the time in question and as indicated. So ordered--Conner, J.

7/16/75 Filed stipulation and order that certain deposition evidence as indicated shall be deemed to be received in evidence if not already so received--and that the attached memorandum of C. P. Graham, dated 12/21/68, be received in evidence as defendant's Exhibit EEE. So ordered--Conner, J.

7/16/75 Filed stipulation and order as to dates of asserted prior art--as to Larkin patent 3,184,556--as to Hutchings Patent 3,548,118--and as to Hutchings design patent Des. 218,173. So ordered--Conner, J.

8/28/75 Filed Opinion #43013--For the reason stated, claim 1 of the Larkin patent is valid and infringed by the Roanwell R-70 and R-71 headsets. Claim 1 of the Hutchings utility patent is invalid. The Hutchings design patent is invalid but, if valid, would be infringed by the Roanwell R-70 headset. Plantronics is entitled to an injunction restraining further infringement of claim 1 of Larkin for the remainder of the term thereof and, if the parties cannot compromise the matter, to an accounting of damages for past infringement. Plantronics' counsel should prepare a proposed judgment order and submit it to Roanwell's counsel for approval as to form. And no attorneys' fees are awarded. Conner, J.

9/18/75 Filed Order--Amended Opinion Order #43013--Opinion dated 8/28/75 is hereby amended nunc pro tunc. Conner, J.

9/23/75 Filed Order--Amended Opinion Order #43013--Opinion dated 8/28/75 is hereby amended nunc pro tunc. Conner, J.

9/29/75 Filed Consent Judgment--defendant is permanently enjoined--Conner, J. Judgment entered 10/2/75. Clerk

UNITED STATES DISTRICT COURT
SOUTHERN DISTRICT OF NEW YORK

-----X
PACIFIC PLANTRONICS, INC., :
Plaintiff, :
v. :
ROANWELL CORPORATION, : CIVIL ACTION
Defendant. : NO. 72-CIV-1625
-----X

PLAINTIFF'S FIRST AMENDED AND SUPPLEMENTAL COMPLAINT

Plaintiff, Pacific Plantronics, Inc., for its complaint against defendants, Roanwell Corporation, KMT Corporation and Roanwell Telephone Supply, avers as follows:

1. This action arises under the Patent Laws of the United States, Title 35, United States Code. Jurisdiction of this Court exists under 28 USC §1228(a) and venue exists under 28 USC §1400(b).

2. Plaintiff, Pacific Plantronics, Inc. ("Plantronics") is a corporation duly organized and existing under the laws of the State of California and has a place of business at 111 Josephine Street, Santa Cruz, California 95060.

3. Defendant, Roanwell Corporation ("Roanwell") is a corporation organized and existing under the laws of the State of New York, having offices and its principal

place of business at 180 Varick Street, New York, New York, within the Southern District of New York.

4. On May 18, 1965, United States Letters Patent No. 3,184,556 were duly and legally issued to Plantronics on an invention by Wallace Keith Larkin, entitled "Miniature Headset-Microphone Adapted for Use with a Mask." Plantronics is the owner of the entire right, title and interest in said patent No. 3,184,556.

5. On July 28, 1970, United States Design Letters Patent No. Des. 218,173 were duly and legally issued to Plantronics on a design invented by Kenneth J. Hutchings, entitled "Combined Microphone and Receiver Instrument." Plantronics is the owner of the entire right, title and interest in said design patent No. Des. 218,173.

6. On December 15, 1970, United States Letters Patent No. 3,548,118 were duly and legally issued to Plantronics on an invention by Kenneth J. Hutchings, entitled "Self-Supporting Headset." Plantronics is the owner of the entire right, title and interest in said patent No. 3,548,118.

7. Plaintiff is informed and, upon such information, believes that defendant Roanwell manufactures, uses and/or sells within this judicial district and elsewhere, headsets known generally by Roanwell Model Nos. R70, R71 and by other model numbers and designations.

8. Each of said acts of manufacture, use and/or sale of Roanwell Model Nos. R70 and R71 infringes claims 1, 2 and possibly 3 of said patent No. 3,184,556.

9. Each of said acts of manufacture, use and/or sale of Roanwell Model No. R70 infringes said Design Patent No. Des. 218,173.

10. Each of said acts of manufacture, use and/or sale of Roanwell Model No. R70 infringes said patent No. 3,548,118.

11. Plaintiff is informed and, upon such information, believes that defendant Roanwell, within this judicial district and elsewhere, had induced and continues to induce infringement of each of the aforementioned patents by others.

12. Defendant's Model No. R70 is a flagrant copy of plaintiff's own headset sold under the trademark "StarSet" and shown particularly in said patent Nos. Des. 218,173 and 3,548,118. Defendant's infringement and inducement of infringement of said patent Nos. Des. 218,173 and 3,548,118 is aggravated, deliberate and willful.

WHEREFORE, plaintiff prays for a preliminary and final injunction against continued infringement and inducing of infringement, and an accounting for damages, an assessment of interest, costs and attorneys' fees and

for such other and further relief as to the Court may
seem just.

BRUMBAUGH, GRAVES, DONOHUE
& RAYMOND

By /s/ Robert Neuner
Robert Neuner
90 Broad Street
New York, New York 10004
344-5888
Attorneys for Plaintiff

IN THE UNITED STATES DISTRICT COURT
FOR THE SOUTHERN DISTRICT OF NEW YORK

PACIFIC PLANTRONICS, INC.,)	
)	
Plaintiff,)	
)	
vs.)	CIVIL ACTION
)	NO. 72 CIV. 1625
ROANWELL CORPORATION,)	
)	
Defendant.)	

ANSWER TO PLAINTIFF'S FIRST AMENDED AND
SUPPLEMENTAL COMPLAINT

The defendant, Roanwell Corporation, in answer to the plaintiff's First Amended and Supplemental Complaint, states the following:

1. Paragraphs 1 to 3 of the First Amended and Supplemental Complaint are admitted.
2. Paragraphs 4 to 6 are admitted, except that it is denied that Letters Patent No. 3,184,556, Des. 218,173 and No. 3,548,118 were duly and legally issued and that the subject matter disclosed in these patents constitutes invention. Further, defendant has insufficient knowledge to admit or deny plaintiff's ownership of these patents, and therefore denies such ownership and leaves plaintiff to its proofs.
3. Paragraph 7 is admitted, so long as it is understood that defendant's use of its Model R70 and R71 headsets constitutes only the normal use of these devices incident

in its design, development, manufacturing and testing of such devices.

4. Paragraphs 8 to 12 are denied.

AFFIRMATIVE DEFENSES

5. Letters Patent No. 3,184,556, Des. 218,173, and No. 3,548,118 are invalid under 35 U.S.C. 103 since at the time of the alleged invention of the subject matter claimed in these patents, such subject matter did not constitute invention and did not require the exercise of inventive faculty for its production, but was obvious to a person of ordinary skill in the art.

6. Letters Patent No. 3,184,556, Des. 218,173, and No. 3,548,118 are invalid under 35 U.S.C. 102 (a) since prior to the alleged invention of the subject matter claimed in these patents, such subject matter had been patented, and shown and described in patents and printed publications, including but not limited to the following:

(a) As to Larkin Patent No. 3,184,556

(1) Pritchett (British) Patent No. 191

(2) Robertson et al (British) Patent No.
716,801

(3) Warth Patent No. 299,300

(4) Hart Patent No. 1,656,914

(5) Olney et al Patent No. 2,485,405

(6) Gilbert Patent No. 2,586,644

(7) Dreher et al Patent No. 2,904,640

- (8) Roanwell Corporation sales brochure
entitled "Roanwell Communications
Terminal Equipment"
- (9) A Light-Weight Headset for Telephone
Operators, by H.J.C. Spencer and J. S. P.
Robertson, Post Office Electrical Engineers'
Journal, Vol. 53, Part 3, October 1960,
pp. 177-180
- (b) As to Hutchings Patents Des. 218,173 and
No. 3,548,118
 - (1) Pritchett (British) Patent No. 191
 - (2) Neve (British) Patent No. 1,082,541
 - (3) Cates Patent No. 2,566,313
 - (4) Erickson Patent No. 2,882,348
 - (5) Dreher et al Patent No. 2,904,640
 - (6) Weiss Patent No. 3,019,306
 - (7) Rose Patent No. 3,031,537
 - (8) Strzalkowski Patent No. 3,035,127
 - (9) Vickerson Patent No. 3,045,073
 - (10) Cohen Patent No. 3,102,172
 - (11) Prentiss et al Patent No. 3,123,678
 - (12) Larkin Patent No. 3,184,556
 - (13) Flygstad et al Patent No. 3,280,273
 - (14) Flygstad et al design Patent Des. 199,125
 - (15) Bryant et al Patent No. 3,440,365
 - (16) Wilson Patent No. 3,513,269

7. Letters Patent No. 3,184,556, Des. 218,173 and No. 3,548,118 are invalid under 35 U.S.C. 102 (a) since prior to the alleged invention of the subject matter claimed in these patents, such subject matter had been known and used by others in the United States, including but not limited to the patentees and assignees of the patents listed in paragraph 6 hereof, the authors of the publications listed in paragraph 6, the readers of such patents and publications, and others associated with such patentees, assignees, authors and readers.

8. Letters Patent No. 3,184,556, Des. 218,173 and No. 3,548,118 are invalid under 35 U.S.C. 102 (g) since prior to the alleged invention of the subject matter claimed in these patents, such subject matter had been invented by others in the United States, who had neither abandoned, suppressed nor concealed their inventions, including but not limited to the patentees of the patents listed in paragraph 6 hereof, the authors of the publications listed in paragraph 6, and others associated with such patentees and authors.

9. Letters Patent No. 3,184,556, Des. 218,173 and No. 3,548,118 are invalid under 35 U.S.C. 102 (e) since prior to the alleged invention of the subject matter claimed in these patents, such subject matter had been described in patent applications which were already on file in the United States Patent Office, including but not limited to the patent applications which became the patents listed in paragraph 6 hereof.

10. Letters Patent No. 3,184,556, Des. 218,173 and No. 3,548,118 are invalid under 35 U.S.C. 102 (b) since more than a year prior to the filing dates of the applications for these patents, the subject matter claimed in these patents had been patented, and shown and described in patents and printed publications, including but not limited to the patents and publications listed in paragraph 6 hereof.

11. Letters Patent No. 3,184,556, Des. 218,173 and No. 3,548,118 are invalid under 35 U.S.C. 102 (b) since more than a year before the filing dates of the applications for these patents, the subject matter claimed in these patents had been known and publicly used and placed on sale in the United States by the patentees and assignees of the patents listed in paragraph 6 hereof, by the authors and readers of the publications listed in paragraph 6 and by others associated with such patentees, assignees, authors and readers.

12. Letters Patent No. 3,184,556, Des. 218,173 and No. 3,548,118 are invalid under 35 U.S.C. 102 (f) since the inventors named in these patents did not themselves invent the subject matter claimed therein.

13. Letters Patent No. 3,184,556, Des. 218,173 and No. 3,548,118 are invalid under 35 U.S.C. 112 since the alleged inventions claimed in these patents were not disclosed in the patents in such full, clear, concise and exact terms as to enable a person skilled in the art to make and use the same, and since the claims of these patents

do not particularly point out and distinctly claim the subject matter of the alleged inventions, but instead are vague and indefinite.

14. Letters Patent No. Des. 218,173 is invalid as a design patent since all of the features of the device disclosed in this patent are utilitarian and none of them are ornamental.

15. Letters Patent No. Des. 218,173 is invalid under 35 U.S.C. 185 since plaintiff filed or caused to be filed corresponding patent applications in foreign countries, within six months after filing the application which resulted in said patent Des. 218,173, without a license from the Commissioner of the United States Patent Office as required by 35 U.S.C. 184.

16. Letters Patent No. 3,184,556, Des. 218,173 and No. 3,548,118 are invalid and unenforceable because of plaintiff's lack of candor and fraud on the United State Patent Office in securing said patents, since plaintiff failed to call to the attention of the Patent Office public uses and prior art references known to plaintiff.

17. Letters Patent No. 3,184,556, Des. 218,173 and No. 3,548,118 are invalid and unenforceable because of plaintiff's lack of candor and fraud in securing corresponding patents in countries foreign to the United States without calling to the attention of the foreign patent offices prior art references known to plaintiff and bars known to plaintiff

which would preclude the grant of valid patents in such foreign countries.

18. Letters Patent No. 3,184,556, Des. 218,173 and No. 3,548,118 are unenforceable because of plaintiff's misuse of such patents in granting licenses under one or more of these patents or their corresponding foreign patents knowing the same to be invalid, in making erroneous and misleading statements in connection with the marketing of its products as to its exclusive rights to the design or features of such products, and in other acts.

AMENDED COUNTERCLAIM

1. The defendant and counterclaimant Roanwell Corporation is a corporation of the State of New York, having its principal place of business at 180 Varick Street, New York, New York.

2. Upon information and belief, the plaintiff, and defendant to this counterclaim, is a corporation of the State of California, having a place of business at 111 Josephine Street, Santa Cruz, California.

3. This Court has jurisdiction of this count under 28 U.S.C. 1338 (a) and 28 U.S.C. 2201.

4. Plaintiff has asserted that it is the owner of United States Letters Patent No. 3,184,556, Des. 218,173 and No. 3,548,118, that said patents are good and valid, and that defendant has infringed said patents.

5. Defendant denies the validity and enforceability of said patents and its infringement thereof.

6. A controversy thus exists between plaintiff and defendant as to the validity and enforceability of said patents, and the scope and infringement of the claims of said patents.

7. Said Letters Patent No. 3,184,556, Des. 218,173 and No. 3,548,118 are invalid for all of the reasons set forth in paragraphs 5 to 18 of the attached Answer to Plaintiff's First Amended and Supplemental Complaint.

8. Said patents are unenforceable because of the plaintiff's bad faith and misuse of such patents, for the reasons set forth in paragraphs 15-18 of the attached Answer.

9. Said patents are not infringed by defendant.

WHEREFORE, defendant demands:

1. That Letters Patent No. 3,184,556, Des. 218,173 and No. 3,548,118 be declared invalid and of no force and effect.

2. That said patents be declared unenforceable for plaintiff's bad faith and patent misuse.

3. That defendant be declared not to infringe said patents.

4. That all costs and other taxable items be taxed against plaintiff, and that defendant be awarded all reasonable attorneys' fees and other expenses incurred by it in

connection with this suit and in connection with plaintiff's charges of infringement and threats of suit against defendant.

5. Such other and additional relief as the Court may deem just and proper.

Respectfully submitted,

/s/ Charles W. Bradley
Charles W. Bradley
Lester W. Clark
COOPER, DUNHAM, CLARK, GRIFFIN
& MORAN
330 Madison Avenue
New York, New York 10017
Tel. (212) 694-4520

OF COUNSEL:

T. E. Gladstone
GLADSTONE & LOWELL
99 Park Avenue
New York, New York 10016

New York, New York
October 18, 1972

IN THE UNITED STATES DISTRICT COURT
FOR THE SOUTHERN DISTRICT OF NEW YORK

PLANTRONICS, INC.,

Plaintiff,

v.

ROANWELL CORPORATION,

Defendant.

CIVIL ACTION NO.
72 CIV 1625
JUDGE CONNER

NOTICE UNDER 35 USC 282

In addition to the prior art of which Plaintiff has already been notified, the Defendant, ROANWELL CORPORATION, hereby gives notice to Plaintiff, PLANTRONICS, INC., of the following patents to be relied upon as anticipation of one or more of the patents in suit and as showing the state of the art. These references are applicable to the Hutchings patent No. 3,548,118 and to the Hutchings Design patent No. D-218,173. Where the effective date of the reference is early enough, the references are also applicable to the Larkin patent No. 3,184,556:

United States Patents

1,969,559

August 7, 1934

J.B. Kelly

2,939,923

June 7, 1960

J.D. Henderson

3,045,073

July 17, 1962

C.S. Vickerson

3,098,127	July 16, 1963	W.H. Huth
3,201,528	August 17, 1965	D.L. Johanson et al
3,491,214	January 20, 1970	L.E. Rosemond et al
3,493,695	February 3, 1970	F.J. Stork

British Patents

1,044,027	Published September 28, 1966	J.P. Ashton
-----------	---------------------------------	-------------

German Patents

DAS 1,078,175	Micro-Technic Huber & Co.	March 24, 1960
DAS 1,132,973	Micro-Technic Huber & Co.	July 12, 1962
DAS 1,139,549	Robert Bosch Elec- tronik GmbH	November 15, 1962

Publications

- 1.* Micro-Technic sales flyer (two pages) on Centron hearing aid entitled "hören - so natürlich wie möglich", designated 671-1-61;
- 2.* Micro-Technic sales flyer (8 pages) on Centron hearing aid entitled "Bulletin" and showing a picture of a hearing aid on the front cover, designated 671-6-61;
- 3.* Micro-Technic undated sales flyer (single page) entitled "CENTRON- Anpassung leicht gemacht";
- 4.* An article in "The Radioear Voice", October 1958, pages 2-12, entitled "The Earmold as a Part of the Receiver Acoustic System" by S.F. Lybarger;
- 5.* An article in "Audecibel" March-April 1961, pages 8-10, 24-25, entitled "Standardized Hearing Aid Measurements" by S.F. Lybarger;
- 6.* "Handbook for Servicing and Repairing Hearing Aids" by Thomas A. Marshall, compiled and edited by the Editorial Staff of the National Hearing Aid Journal, copyrighted 1954, pages 32-36.

- 7.* Widex Hearing Aid Advertisements which appeared:
(a) The Hearing Dealer, June 1968, Page 21;
December 1968, Page 19.
- 8.* Siemens Hearing Aid Advertisements which appeared
in: (a) The Hearing Dealer, September 1961,
Page 34; April 1963, Page 25
(b) The Journal of the Society of Hearing Aid
Audiologists, Vol. 1, #18, 1962, Page 32;
(c) National Hearing Aid Journal, June 1963,
Page 19.
- 9.* Vanco flyer, undated, on its "MINI-EAR".
- 10.* QUALITONE hearing aid advertisements which
appeared in: The Hearing Dealer, January 1961,
page 23; October 1962, page 18.
- 11.* Omega hearing aid advertisements which appeared
in: (1) The Hearing Dealer, April 1965, page 39;
(2) National Hearing Aid Journal, July 1965,
page 38.
- 12.* Maico Hearing Aid Advertisements which appeared in:
(1) National Hearing Aid Journal, December 1965;
April 1966, Page 30; December 1967
(2) The Hearing Dealer, February 1967, Page 27
(3) Selectronic I flyer, Model BI
(4) Selectronic II flyer, Model BJ
(5) Direction Ear flyer
(6) Direction Ear II flyer
- 13.* Audiotone Hearing Aid Advertisements which appeared
in: (1) Audecibel, Spring 1964, Page 78
(2) The Hearing Dealer, December 1965, Page 28;
December 1967, Page 28; and September 1968,
Page 27
(3) National Hearing Aid Journal, November 1965,
Page 78
(4) Sales flyers on its Model 77; The Phenix,
Model A-11; The Pride, Model A-12; The Page,
Model A-15; The Oracle, Model A-16.
- 14.* Oticon Hearing Aid Advertisements which
appeared in: (1) The Hearing Dealer, September
1968, Page 4
(2) Oticon flyer, 1968.

Attention is also directed to the references listed
on page 3 of Defendant's Answer dated May 31, 1972 on pages

40-43 of the Defendant's Answer to Plaintiff's First Discovery
Inquiries, dated August 15, 1972, on pages 2-3, 11-12 and
17-18 of the Defendant's Answer to Plaintiff's Interrogatories,
Third Set, dated July 24, 1974.

ROANWELL CORPORATION

By Lester W. Clark
Lester W. Clark
COOPER, DUNHAM, CLARK, GRIFFIN
& MORAN
30 Rockefeller Plaza
New York, New York 10020
(212) 977-9550
Attorney for Defendant

Dated: October 4, 1974

* A copy is being supplied herewith

IN THE UNITED STATES DISTRICT COURT
FOR THE SOUTHERN DISTRICT OF NEW YORK

PLANTRONICS, INC.,

Plaintiff,

v.

ROANWELL CORPORATION,

Defendant.

:
:
:
:
: CIVIL ACTION NO.
: 72 CIV 1625
:
:
:

: JUDGE CONNER
:
:
:

NOTICE OF PRIOR ART

Supplementing the notice of prior art given
October 4, 1974, the Defendant, ROANWELL CORPORATION, here-
by gives notice to Plaintiff, PLANTRONICS, INC., of the fol-
lowing additional prior art:

- 1.* Ohio State University Foundation report dated
October 1956, TN 56-57 (Publ. No. PB-126761)
- 2.* U.S. Government Research Report Index dated
June 13, 1958, pp. 313, 330
- 3.* Vanco sales flyer entitled "Mini-Ear" with
heading "Features Lowest Price, Sturdy Case
Design, Economical Operation, Moderate Gain"
- 4.* Vanco sales flyer entitled "Proudly Announces
The New MINI-EAR"

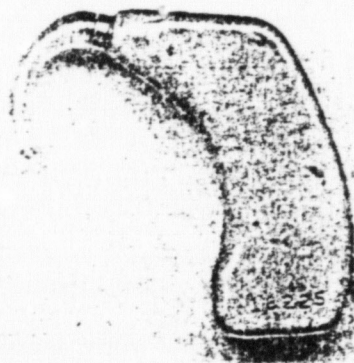
- 5.* Vanco Mini-Ear hearing aid (photocopy attached)
- 6.* Audiotone sales flyer entitled "Model A-14
SUPERIOR Post-Auricle Hearing Instrument"
- 7.* Audiotone sales flyer entitled "The SUPERIOR
Model A-14 Post-Auricle Instrument"
- 8.* Maico sales flyer entitled "Selectronic I
Precision Tuned Hearing Aid Model BI" (front
and back)
- 9.* Maico sales flyer entitled "Selectronic II
Precision Tuned Hearing Aid Model BJ" (front
and back)
- 10.* Maico sales flyer entitled "Direction Ear
Model BU Behind-The-Ear Hearing Aid" (4 pages)
- 11.* Maico sales flyer entitled "Direction Ear II
Model BZ Behind-The-Ear Hearing Aid" (front
and back)

ROANWELL CORPORATION

By *Lester W. Clark*
Lester W. Clark
COOPER, DUNHAM, CLARK, GRIFFIN
& MORAN
30 Rockefeller Plaza
New York, New York 10020
(212) 977-9550
Attorney for Defendant

Dated: October 11, 1974
New York, New York

* A copy is being supplied herewith



IN THE UNITED STATES DISTRICT COURT
FOR THE SOUTHERN DISTRICT OF NEW YORK

PLANTRONICS, INC.,)	
)	
Plaintiff,)	CIVIL ACTION
)	NO. 72 CIV. 1625
v.)	
)	
ROANWELL CORPORATION,)	
)	
Defendant.)	(JUDGE CONNER)

NOTICE OF PRIOR ART

In addition to the prior art of which plaintiff has already been notified, the defendant, ROANWELL CORPORATION, hereby gives notice to plaintiff, PLANTRONICS, INC., of the following additional prior art:

1. British patent 716,801, filed October 24, 1952, published October 13, 1954;
2. Spencer-Roberton article entitled "A Lightweight Headset for Telephone Operators", in the October 1960 issue of the Post Office Electrical Engineers' Journal, pages 177-180.

ROANWELL CORPORATION

By /s/ Lester W. Clark
Lester W. Clark
COOPER, DUNHAM, CLARK,
GRIFFIN & MORAN
30 Rockefeller Plaza
New York, New York 10020
(212) 977-9550
Attorney for Defendant

Dated: February 6, 1975
New York, New York

IN THE UNITED STATES DISTRICT COURT
FOR THE SOUTHERN DISTRICT OF NEW YORK

-----x
PLANTRONICS, INC., :
Plaintiff, : CIVIL ACTION
v. : NO. 72 CIV. 1625
ROANWELL CORPORATION, : JUDGE CONNER
Defendant. :
-----x

RESPONSES TO WRITTEN QUESTIONS
BY JEAN C. CHOIGNARD

1. Why, and at whose request, did you make an investigation to determine whether any statutory bar existed which would prevent the filing of valid foreign patent applications corresponding to Larkin U. S. patent 3,184,556? Describe the circumstances surrounding the request, the information supplied to you and the investigation you undertook. Also, state when the request was made, and when, and for how long, the investigation took place.

Answer: While U. S. Patent 3,184,556 was still pending in the U. S. Patent Office, but more than one year after its filing date, I had a conversation with someone at Plantronics (I am almost certain it was Keith Larkin) who asked me whether corresponding patent applications could be filed in foreign countries, particularly Great Britain. The question arose because Plantronics was in the process of setting up a distributor or representative in Great Britain, and that distributor

or representative had requested that such a patent application be filed in Great Britain. I did not make an investigation as such, I knew that Plantronics' headsets had been described in technical magazines of wide distribution that would have reached Great Britain.

2. (a) Did you advise Mr. Keith Larkin, or anyone else representing Plantronics, Inc.*, as to the existence or effect of any statutory bar or other legal impediment to the filing of foreign patent applications corresponding to Larkin U. S. patent 3,184,556?

Answer: I told the person I believe to be Keith Larkin that it was too late to file a corresponding patent application in Great Britain.

2. (b) Did you give such advice specifically as to England or Great Britain?

Answer: Yes.

3. If the answer to the preceding paragraph 2 is affirmative in any part, state, in each case of rendering such advice, what advice you gave, when it was given, to whom it was given (naming each person to whom it was given), and the manner in which it was given. If orally, describe the circumstances; if in writing, describe all of the relevant documents as best you can recall.

Answer: Same as above. To the best of my recollection the advice was given on the telephone.

* Plantronics, Inc. shall be understood to include Pacific Plantronics, Inc. and any other predecessor Company.

4. Did you know that a foreign application corresponding to Larkin U. S. patent 3,184,556 was filed in Great Britain (which ultimately became British patent 1,009,818, a copy of which is being supplied)? If so, state when you first learned of this. Also, state all of the facts known to you concerning the filing of this British patent application and the securing of this British patent.

Answer: My recollection is hazy but I am under the impression that I learned later that a patent application corresponding to U.S. Patent 3,184,556 was filed in Great Britain. I do not know when I learned of this nor do I know any facts concerning the filing of this British application other than what I have stated above.

5. To your knowledge, were any other foreign patent applications filed (including foreign utility model applications and petty patent applications) which corresponded in whole or part to Larkin U. S. patent 3,184,556? If so, identify each such foreign application and state all of the facts known to you concerning each such foreign application.

Answer: I do not remember whether any other foreign patent applications were filed corresponding in whole or in part to Larkin U. S. Patent 3,184,556.

6. If the answer to paragraph 2 hereof is affirmative in any part, state, in each case of rendering such advice, whether it was given before or after the August 25, 1964 filing date of British patent 1,009,818, and whether it was given before or after this British patent was published on November 10, 1965.

Answer: Not applicable.

7. If you know, state whose decision it was to file the British patent application which became British patent 1,009,818. Also, state all facts known to you concerning this decision.

Answer: I do not know whose decision it was to file the British patent application which became British Patent 1,009,818, except that I am under the impression that the British distributor representative was quite insistent that this be done.

13/ Jean C. Chognard
Jean C. Chognard
Deponent

Notarial Seal and Signature

IN THE UNITED STATES DISTRICT COURT
FOR THE SOUTHERN DISTRICT OF NEW YORK

-----x
PLANTRONICS, INC., :
Plaintiff, : CIVIL ACTION
v. : NO. 72 CIV. 1625
ROANWELL CORPORATION, : JUDGE CONNER
Defendant. :
-----x

FURTHER RESPONSE BY JEAN C. CHOIGNARD
TO WRITTEN QUESTION NO. 6

6. If the answer to paragraph 2 hereof is affirmative in any part, state, in each case of rendering such advice, whether it was given before or after the August 25, 1964 filing date of British patent 1,009,818, and whether it was given before or after this British patent was published on November 10, 1965.

Answer: When I gave this advice I had before me a recent letter from Plantronics' proposed distributor or representative in Great Britain. and that letter contained a request that a patent application corresponding to U. S. Patent 3,184,556 be filed in Great Britain. Although I have no present recollection of the date I gave this advice, it was soon after the receipt of that letter by Plantronics.

Notarial Seal and
Signature

15/ Jean C. Chognard
Jean C. Chognard
Deponent

IN THE UNITED STATES DISTRICT COURT
FOR THE SOUTHERN DISTRICT OF NEW YORK

-----	:	
PLANTRONICS, INC.,	:	
	:	
Plaintiff	:	
	:	
v.	:	CIVIL ACTION
	:	72 CIV 1625
	:	JUDGE CONNER
ROANWELL CORPORATION,	:	
	:	
Defendant	:	
-----	:	

PLAINTIFF PLANTRONICS'

MOTION FOR AN ORDER GRANTING
PARTIAL JUDGEMENT AND NARROWING ISSUES

The subject matter of this motion.

This is a suit by Plantronics for United States infringement by Roanwell of three United States patents.

By way of affirmative defense and also by way of counterclaim of unenforceability of the three United States patents, Defendant Roanwell has pleaded matters relating to foreign patents not here in suit, as follows:

"17. Letters Patent No. 3,184,556, Des. 218,173 and No. 3,548,118 are invalid and unenforceable because of plaintiff's lack of candor and fraud in securing corresponding patents in countries foreign to the United States without calling to the attention

of the foreign patent offices prior art references known to plaintiff and bars known to plaintiff which would preclude the grant of valid patents in such foreign countries.

"18. Letters Patent No. 3,184,556, Des. 218,173 and No. 3,548,118 are unenforceable because of plaintiff's misuse of such patents in granting licenses under one or more of these patents or their corresponding foreign patents knowing the same to be invalid,"

Defendant Roanwell has proposed findings of fact numbered D-36 through D-44 to the foreign patent and foreign license subject matter.

The motion

Plaintiff Plantronics moves for an order [suggested form attached] that will narrow the issues and significantly shorten the trial, by eliminating the above identified subject matter from the case.

The motion is to strike the irrelevant pleadings and/or grant judgment on the pleadings dismissing the counterclaim of unenforceability of the United States patents in suit by reason of foreign patents or licenses of foreign patents.

The motion can at the option of the court be considered alternatively:

- (1) As a motion for judgment on the pleadings under Rule 12 (c).

- (2) As a suggestion that the court strike the quoted pleadings on its own initiative under Rule 12 (f).
- (3) As a motion for partial summary judgment under Rule 56.

MEMORANDUM IN SUPPORT OF MOTION

Plaintiff's Amended Complaint charges infringement by Defendant Roanwell of three United States patents:

--two Hutchings patents,

and

one Larkin patent.

No foreign patents are involved in the Complaint or Amended Complaint.

Defendant alleges an affirmative defense and counter-claim of unenforceability--as quoted above--of the United States patents in suit, by reason of matters relating to foreign counterparts of the three United States patents.

* * *

The two Hutchings patents.

Defendant Roanwell has not proposed any findings as to wrongful procurement of foreign counterparts to either of the two United States patents, Hutchings 3,548,118 and Hutchings Des. 218,173.

It thus appears that the issue pleaded has been abandoned with respect to those two patents.

An order eliminating them from the trial of the case is necessary, so that the parties will know what to prepare to try and will not be caught by surprises.

* * *

The Larkin patent.

The Larkin United States patent in suit was the subject of foreign counterpart applications only in the United Kingdom and Japan.

Defendant has proposed findings only as to the British Larkin patent and its license, so we address only that topic.

The uncontroverted facts are:

The application for the Larkin United States patent in suit, was filed December 11, 1961. Nearly three years later but before the U.S. issue date of May 18, 1965, a Larkin application for British counterpart patent was filed on August 25, 1964.

Plaintiff Plantronics and S.G. Brown Ltd. of England negotiated in 1964-5 a contract dated February 5, 1965, creating what may be called a joint venture to develop markets in England, France, Italy, Belgium, Germany and Holland for light weight headsets.

7

The contract contemplated Brown's use of Plaintiff's manufacturing technology, improvements in both manufacturing and products resulting from Plaintiff's on-going R & D, and other support know-how, by which Brown might manufacture in England to Plantronics' design and specification and sell in such foreign markets. The group of countries was later expanded to include Scandinavia and select British Commonwealth countries.

While the Plantronics-Brown February 5, 1965, contract contemplated that Plaintiff would "seek patent coverage" (which would be licensed to S.G. Brown Ltd.) in all the therein recited countries, no patent applications were ever filed in any of those countries other than the previously filed British application.

The S.G. Brown Ltd. effort in England started with Plantronics 1965 disclosure of product specs and manufacturing and other technology to Brown and Brown's efforts to manufacture and sell (e.g., to the British Post Office). But the effort floundered, resulting in a notice of termination in 1967 by reason of Brown's failure to either earn or pay the \$2000 per year minimum royalty. An effort at novation was attempted with a new contract in 1968 but Brown continued to flounder

and the whole venture was finally abandoned in 1972.

Defendant Roanwell had no part in the Plantronics-Brown contracts of 1965 and 1968, terminated in 1972.

The contracts did not license the United States patents in suit, only foreign patents.

The British Larkin patent was itself surrendered for cancellation last year, and Plantronics has informed Brown that Brown does not have any further obligation to Plantronics under the contracts.

Defendant has charged that the British Larkin patent not here in suit was obtained (in the now-popular phrase) "by fraud" on the British Patent Office, in that the inventor is alleged to have known of British patent-barring events (i.e., United States publications believed to have reached England).

* * *

Comment upon the facts

Plantronics denies the allegation of pre-1974 knowledge of publications having reached England early enough to invalidate the British patent.

But the point here is that trial of that issue will involve time-consuming and burdensome study of many documents, research into publication-circulation in England,

examination of witnesses about the documents, examination of applicable British law, resolution of attorney-client privilege issues, may force waiver of attorney-client privilege because the rebuttal evidence is in privileged documents, etc.

--All on a foreign-law issue which is irrelevant to the cause and lawful defenses before the court.

* * *

Defendant argues in its proposed findings that the Plantronics-Brown 1965 contract terminated in 1967, to "seek patent coverage" in the listed countries, was a contract to violate some undefined law inasmuch as patent coverage later proved to be unobtainable in those countries.

But that is now ancient history long ago purged and it is in no event relevant to any issue before the court.

The parties may differ as to the importance of the role in the contract, of the Plantronics know-how and technology grant to Brown, the Plantronics continuing R & D services by which Brown was to learn of Plantronics improvements, the Plantronics indemnity of Brown from charges of infringement of patents owned by others through manufacture to Plantronics' designs and specifications, and other features of the contract covering the parties' venture--by contrast with the license of any patents in the subject countries.

But all that is irrelevant to any issue or lawful defense before the court and ought not be the subject of

trial here.

* * *

The question then is this:

Should the court spend its time, and that of the parties, investigating a British patent, British law, and contracts seeking to promote foreign operations,

(a) in which Defendant was not involved,
and

(b) none of which are the basis for Plaintiff's claim in this suit?

Or should summary judgment, judgment on the pleadings, or a strike of the pleadings, be granted as to the pleadings recited in the motion and attached form of Order, as failing to state either an affirmative defense or counterclaim of unenforceability of any of the United States patents in suit?

The law provides a clear answer.

* * *

Defenses of misuse and
fraudulent procurement
are applicable only against
the patent misused or wrongly procured,
not against any other patent.

This court, speaking through Your Honor, phrased the rule of law just last year, thus:

"Fraud in obtaining one patent will not invalidate or render unenforceable another patent in common ownership even where the two patents cover related subject matter," [citation].¹

There is a plethora of supporting modern authority.

The Supreme Court phrased the basic and still-followed philosophy

"Equity does not demand that its suitors have led blameless lives."²

The Court of Claims, 1971:³

"Paragraph 28 of the amended answer says that plaintiff and its subsidiaries do not have patent coverage on meproamate in the aforesaid [foreign] territories and that plaintiff has illegally divided world markets and prevented American Cyanamid from competing with plaintiff in the aforesaid territories which conduct is illegal and amounts to a misuse of the meproamate patent.

[But the court held] "The contracts deal only with meproamate made outside the United

-
1. Saxton Products Inc. v. United States Telephone Company 182 U.S.P.Q. 608 (SDNY 1974).
 2. Loughran v. Loughran, 292 U.S. 216, 229 (1934).
 3. Carter-Wallace v. United States, 449 F.2d 1374 (Ct. Cl. 1971).

States by foreign corporations under foreign patents for sale and use outside the United States [exactly as with S.G. Brown Ltd.].

"* * * patent misuse defenses must stem from illegal or inequitable conduct under the patent or patents in litigation. Clearly the agreements here in dispute related in no way to the United States meprobamate patent, but rather deal only with foreign patents."

The Sixth Circuit, 1971:

"The misuse must be of the patent in suit." [citations].⁴

The Seventh Circuit, 1956:

"* * * a defense of misuse [is] a defense against the patent misused."⁵

The Ninth Circuit, 1963:

"* * * misconduct in the abstract, unrelated to the claim to which it is asserted as a defense, does not constitute unclean hands."⁶

4. Kolene Corp. v. Motor City Metal Treating Inc., 440 F.2d 77, 84 (6th Cir. 1971).

5. Apex Electrical Mfg. Co. v. Altorfer Bros., 238 F.2d 867 (7th Cir. 1956).

6. Republic Molding Corp. v. Photo Utilities et al, 319 F.2d 347, 349 (9th Cir. 1963).

The Tenth Circuit, 1968:

"Since the Swift Patent is the only patent involved in the instant suit * * * it is difficult to see how the misuse alleged by McCullough of the remainder of the patents in W.D.I.'s patent pool deny it the benefit of the Swift patent."⁷

Patent Law Perspectives, 1971, §g.3[4], in a commentary upon Kolene, supra:

"* * * the misuse must be connected to the matter in litigation, and the defense is not available to a party to whom the alleged misconduct is of no concern."

The Supreme Court in Precision Instruments and Keystone Driller⁸ has twice considered suits brought on truly fraudulently procured patents along with other patents to the same subject matter. There, inequity of suit on the fraudulent patent was focused against the defendant before the court, and was an offense against the role of the court itself. In each case the Court held that a plaintiff must have his hands clean as to the subject matter of his suit

7. McCullough Tool Company v. Well Surveys Inc., 395 F.2d 230, 238 (Tenth Cir. 1968).

8. Precision Instrument Mfg. c. Automotive Maintenance Machinery, 324 U.S. 806 (1945); Keystone Driller v. General Excavator, 290 U.S. 240 (1933).

--which he did not there have, the suits there being
brought upon the fraudulent patent among others.

But the present case is like the several above-quoted
authorities (and others as well) all of date since Precision
and Keystone, in that this suit is not upon a patent alleged
to have been fraudulently procured.

* * *

Defendant here having not been involved in the British
patent and license, and the British patent and license being
not a part of or the basis of Plaintiff's claim, they are
immaterial to any issue in this suit.

The defense of misuse
is not applicable
when the effects thereof
no longer exist.

This court is familiar with the unquestioned authority
that a misuse, if it ever existed, does not bar suit once
the misuse has been purged and its effects (if any there be)
have been dissipated. Kins, Dissipation of Patent Misuse,
1968 Wisconsin Law Review 918.

Here there is no showing of any effects of the allegedly
wrongfully procured British patent, so none need to be
purged or dissipated.

However, both the British patent and the license
thereof have been terminated; and there is no evidence of
any identifiable effect upon commerce that might remain.

Thus irrespective of what might have been in the past,
it has no relevance to the present case now going to trial.

* * *

Thus, it is clear, the entire story of what may or may
not have gone on in England, is so clearly immaterial to any
issue in this law suit that the pleading in the motion
should be stricken, and judgment for Plaintiff granted as
to the subject matter thereof.

Respectfully,

/s/ Tom Arnold
Tom Arnold
Paul Janicke
Arnold, White & Durkee
2100 Transco Tower
Houston, Texas 77027
713/621-9100

Of Counsel:

Robert Neuner
Brumbaugh, Graves, Donohue & Raymond
30 Rockefeller Plaza
New York, New York 10020
212/489-3300

ATTORNEYS FOR PLANTRONICS, INC.

IN THE UNITED STATES DISTRICT COURT
FOR THE SOUTHERN DISTRICT OF NEW YORK

----- x
PLANTRONICS, INC., :
Plaintiff, : CIVIL ACTION
v. : No. 72 CIV 1625
ROANWELL CORPORATION, : (JUDGE CONNER)
Defendant. :
----- x

DEFENDANT'S MEMORANDUM
IN OPPOSITION TO
PLAINTIFF'S MOTION FOR AN ORDER
GRANTING PARTIAL JUDGMENT AND NARROWING ISSUES

This memorandum is in opposition to plaintiff's motion seeking judgment on the pleadings, or summary judgment, as to affirmative defenses raised in paragraph 17 and a portion of paragraph 18 of the Answer to Plaintiff's First Amended and Supplemental Complaint, filed October 18, 1972, and the same as to these paragraphs insofar as they are incorporated by reference into the defendant's Counterclaim for declaratory judgment.

As the plaintiff's motion explains, this is a patent infringement suit based upon three U. S. patents, namely Larkin patent 3,184,556, Hutchings patent 3,548,118

and Hutchings design patent Des. 218,173, with a counter-claim seeking to have these patents declared invalid, unenforceable and not infringed.

Paragraph 17 and the relevant portion of paragraph 18 are set forth in plaintiff's motion, and need not be repeated here. They pertain to alleged fraudulent conduct on the part of the plaintiff in procuring a British patent corresponding to the Larkin U. S. patent in suit* and exclusive foreign licenses predicated upon this British patent -- such licenses containing broad territorial and other restrictions based on the power of the U. S. Larkin patent in suit, and subsequently, that of the two U. S. Hutchings patents in suit, these restrictions extending even beyond the subject matter covered by the claims of these patents.

The motion by plaintiff, filed shortly before trial, and two and a half years after the affirmative defenses were first raised in defendant's Answer -- based upon the ground of legal insufficiency -- is said to have as its purpose the elimination of needless preparation and trial time. Discovery on these issues, however, has been completed, over the opposition of the plaintiff, and the proofs at this point

* Defendant will stipulate that the reference to Hutchings patents 3,548,118 and Des. 218,173 may be stricken from paragraph 17, but not paragraph 18 (plaintiff having already been advised by defendant's answers to interrogatories that this defense would not be pursued as to these Hutchings patents).

are largely documentary. Thus, plaintiff's late motion should be rejected out of hand and the merits of the defenses assessed in the context of the evidence pertaining to them.

FACTS

The Court will recall that the issues presented by the plaintiff's motion were discussed to some extent at a conference held last October in connection with motions by defendant to compel discovery relevant to these issues. Many of the relevant facts were discussed at that time, but additional facts have since been developed. These facts, as they relate to the plaintiff's foreign filing and its foreign licensing, will be set forth separately, even though these two activities are significantly interrelated.

Foreign filing. The application for the U. S. Larkin patent in suit was filed on December 11, 1961, and, thereafter, in the course of negotiating an exclusive license agreement with a British company, S. G. Brown Ltd., for Great Britain and most of Central Europe, the plaintiff on August 25, 1964 filed an application for a British patent which later resulted in British patent No. 1,009,818. (A copy of which is attached hereto behind Tab 1). Since the British application was thus not filed within a year after the Larkin U. S. filing date,

it was not entitled to the benefit of the U.S. filing date under International Convention privileges, and consequently, any use or publication in England prior to the actual filing date of the British application would constitute a statutory bar -- a fact well understood by U. S. patent attorneys.

At the time the British application was filed, plaintiff had been marketing headsets covered by the Larkin patent for about three years (Plaintiff's Response to Interrogatory No. 9(a), filed November 14, 1973) and advertising them by ads or new product releases in trade journals of international circulation* for almost that long. (Chognard Depos. 29-31 and Response to Written Question No. 1).

In depositions taken of plaintiff's former patent attorney, Mr. Jean Chognard, he testified that when the plaintiff's license negotiations with S. G. Brown, Ltd. were in progress, he was asked by plaintiff whether any statutory bar existed which would prevent the filing of valid patent applications in foreign countries, and he advised plaintiff that such a bar existed. (Chognard Depos. p. 29) With regard to Great Britain

* Following defendant's motions to compel discovery, plaintiff has filed admissions that certain of the relevant publications were publicly available in British libraries prior to the Larkin British filing date. (Plaintiff's Supplemental Response to Defendant's Request for Admissions, filed October 29, 1974). Also, plaintiff has apparently surrendered the Larkin British patent, some nine years after its grant, and more than two years after defendant produced publications of international circulation in the pretrial discovery proceedings in this suit.

specifically, in depositions on written questions allowed by Your Honor, Mr. Chognard testified that he "knew that Plantronics' headsets had been described in technical magazines of wide distribution that would have reached Great Britain". (Chognard response to question No. 1) Also, he testified as follows:

"2. (a) Did you advise Mr. Keith Larkin or anyone else representing Plantronics, Inc., as to the existence or effect of any statutory bar or other legal impediment to the filing of foreign patent applications corresponding to Larkin U. S. patent 3,184,556?

Answer: I told the person I believe to be Keith Larkin that it was too late to file a corresponding patent application in Great Britain.

2. (b) Did you give such advice specifically as to England or Great Britain:

Answer: Yes." (Chognard Response to Written Question No. 2, filed November 6, 1974)

Following the receipt of this advice, however, the plaintiff filed a British patent application directly with a British patent agent.*

* The plaintiff's motion observes that Larkin foreign patents were filed only in the United Kingdom and Japan, and since defendant's proposed findings treat only the U.K. patent, only that one will be discussed. We note, however, that if the Larkin Japanese patent application was filed in 1964, after the advice of Mr. Chognard that a statutory bar exists as to foreign filing, it was also fraudulently filed. Following the conference in October, however, plaintiff refused our request to produce papers relevant to the Japanese application, even though many of them are not privileged, on the basis that the agreement at the conference and the Court's informal order was limited to the U.K. application.

Foreign licenses. After the filing of the Larkin British application, the negotiations with S. G. Brown Ltd. resulted in an exclusive license agreement dated February 5, 1965, in which S. G. Brown agreed not to dispute the validity of any patents obtained by plaintiff. (Tab 2) This agreement granted S. G. Brown an "exclusive license to manufacture, use, sell, rent or hire" in Great Britain, France, Italy, Belgium, Germany and Holland for a five-year period, with a right to renew for an additional five years. The plaintiff agreed to "seek patent coverage" in these countries, and the exclusive license was said to be under the plaintiff's patents set out in Schedule I (which has not been located) and the patents to be applied for. In none of the six countries licensed did plaintiff have any issued patents, and, thus, its only patent right in any of these countries was the pending Larkin British application already discussed.

In 1966 the licensee requested that its exclusive license be extended to several other countries, and the plaintiff granted a territorial extension to the Scandinavian countries, India, Pakistan, New Zealand, South Africa and Australia, without having any patent rights in any of these new countries.

On July 1, 1968, the 1965 agreement was replaced by a new agreement which granted S. G. Brown an exclusive license to manufacture in Great Britain and an exclusive right to sell

to Public Telephone Administrations in the United Kingdom and four other countries -- the exclusive right to sell lapsing into a nonexclusive right if formal approval from the Administrations in these countries was not obtained within specified time periods. (Tab 3, App. C) Also, it included a nonexclusive license to sell to other purchasers in these and many other countries.

The 1968 agreement contained an Appendix A which listed both the Larkin U. S. patent in suit and the corresponding Larkin British patent. The license, however, was not limited to products covered by these patents, or by any other present or future patents of plaintiff. Rather, the "Licensed Products" were defined as all headset products manufactured and marketed by plaintiff for general use in communications applications, with certain exceptions as to Government sales and the like, and all components and replacement parts used in such headsets. (Tab 3, para. 1(b) to 1(d) and App. B).

Further, the 1968 agreement contained a specific provision that S. G. Brown would not export these Licensed Products outside the licensed territory, without prior written approval from plaintiff (Tab 3, para. 2(c)), and a three-year carry-over clause that S. G. Brown would not, directly or indirectly, for three years after the date of termination of the license, manufacture or sell any of the Licensed Products (or

direct copies or direct derivations) either in the licensed territory or any area of the world in which the plaintiff or its designee is then selling such products (Tab 3, para. 15(f)).

In addition, the 1968 agreement provided that S. G. Brown would not sell or distribute any "equipment" which utilized "the accoustical tube principle" and weighed less than six (6) ounces, unless manufactured by S. G. Brown or purchased from plaintiff, with certain designated exemptions (Tab 3, para. 3(e)) -- this "equipment", like the "Licensed Products", not being limited to equipment falling within any of plaintiff's patents.

By a letter of August 30, 1972, the plaintiff exercised its right to terminate the 1968 agreement, as a consequence of a change in ownership of S. G. Brown, and, in its letter of termination, called specific attention to the provisions of paragraph 15(f). (Tab 4)

This last month (January, 1975) plaintiff again wrote to S. G. Brown, this time releasing and discharging S. G. Brown, retroactively, from any obligations under the 1965 and 1968 agreements, and, as already noted, plaintiff has recently surrendered its British patent -- some nine years after its issuance.

DISCUSSION

With regard to the alleged fraudulent procurement of the Larkin British patent, defendant agrees that, as a general rule, misuse in connection with one patent will not affect another, and the same may be true as to fraud. Saxton Products, Inc v. U. S. Telephone Co. 182 USPQ 608 (SDNY, 1974); but see Keystone Driller Co. v. General Excavator Co. 290 U. S. 240 (1933), where fraud in the suppression of prior art as to one of the patents in suit (which was held valid in an earlier suit, and reliance placed on the earlier judgment in an application for a temporary injunction in the General Excavator suit) was held to bar relief on the five closely related patents in suit; discussed in Chromalloy American Corp. v. Alloy Surfaces Co., 339 F. Supp. 859, 875 (DC Del. 1972) motions denied, 55 FRD 406 (D.C. Del. 1972) and 351 F. Supp. 449 (DC Del. 1972); Precision Instruments Co. v. Automotive Co. 324 U.S. 806 (1945), where fraud in suppressing evidence of perjury in an interference proceeding, before the Patent Office, which apparently involved only one of the three patents in suit, was held to bar relief as to all three; and East Chicago Machine Tool Corp. v. Stone Container Corp. 181 USPQ 744, 748 (DC Ill. 1974).

We are not here, however, dealing merely with one patent in relation to another, but with the plaintiff's entire activities

involving the alleged invention for which it is seeking recognition in this Court and an enforcement of its claimed right of exclusivity. These activities include plaintiff's fraudulent procurement of the Larkin British patent, in concert with its concurrent negotiation of the 1965 exclusive license agreement with S. G. Brown, predicated upon this patent, which agreement precluded Brown from attacking the validity of this or any of plaintiff's patents, and the superseding agreement of 1968 -- which maintained the prohibition against a validity attack by Brown at least as to the patents licensed (Tab 3, para. 10(e)), and improperly restricted the licensee's freedom to deal with both patented and unpatented products.

The essential role of the Larkin British patent in creating the exclusive license agreements, as well as exclusivity in Europe for the Larkin invention, is indicated by Brown's insistence that a British patent application be filed before the 1965 agreement was effected (Chognard Response Nos. 1 & 7), by the provision in the 1965 agreement requiring plaintiff to seek patent coverage, by S. G. Brown's right to cancel on thirty days' notice if the licensed patents should be defeated, and by the prohibition against Brown attacking the validity of any of plaintiff's patents. (Tab 2, para. 1).

Thus, we are not dealing with the concept of suitors leading blameless lives in matters irrelevant to their suits, but with knowingly fraudulent activities pertaining to the chose for which the plaintiff is requesting this Court's cognizance.

It is defendant's position that if plaintiff's unclean hands have improperly extended the monopoly for the Larkin invention to foreign territories, the plaintiff should be denied protection for this invention -- just as though the plaintiff had illegally extended the exclusivity of its invention in terms of time, rather than territory. See, e.g., Brulotte v. Thys Co., 379 U.S. 29 (1964); and see Morton Salt Co. v. Suppiger Co. 314 U.S. 488 (1942) and United States v. Univis Lens Co. Inc. 316 U.S. 241, 251 (1942), where the Supreme Court observed that the particular form or method by which a patent monopoly is sought to be extended is immaterial.

Turning to the foreign licenses to Brown, even apart from the question of fraudulent procurement of the Larkin British patent, as already noted the 1968 agreement contained a provision that the licensee would not export "Licensed Products" outside the licensed territory without prior written approval from plaintiff -- the "Licensed Products" definition in no way being limited to patented headsets, or even to complete headsets. (Tab 3, para. 2(c), para. 1(b) to 1(d), App. B).

Unlike the situation in the Carter-Wallace case, under which the plaintiff seeks refuge, this constraint against exportation did not apply only to the exportation of products from one foreign country to another, so as to be "based solely on foreign patents, relate only to operations and transactions outside the United States, and have nothing to do with United States commerce or the United States ... patent." Carter-Wallace, Inc. v. United States, 449 F.2d 1374, 1385-6 (Ct. Clms., 1971). Nor is there a consent decree present here, as in the Carter-Wallace case, to render the restriction a nullity. id. 449 F.2d at p. 1386. Rather, the export restriction in the 1968 Brown agreement included the United States within its scope, as well as numerous countries where plaintiff had no patents -- and, indeed, the only colorable power the plaintiff had for imposing such a constraint as to the United States was the Larkin U.S. patent identified in Appendix A of the agreement, and the subsequently issued Hutchings patents in suit. (Tab 3, App. A); cf United States v. National Lead Co. 63 F.Supp. 513, 524 (SDNY 1945) affd 332 U.S. 319 (1947); United States v. General Electric Co. 82 F.Supp. 753, 847 (DC N.J. 1949).

While the plaintiff might have exercised its U.S. patents to prevent sales of patented products within the United States, assuming these patents to be valid, it cannot properly convert this statutory right of exclusivity into a restrictive

agreement by a licensee not to export into this country -- especially where the "Licensed Products" are in no way limited to articles covered by the patents. cf United States v. National Lead, supra, 63 F. Supp. 513, at p. 518; United States v. General Electric, supra, 82 F.Supp. 753, at p. 845-6.

This broad proscription against exportation to nonlicensed countries amounts to a division of world markets -- and the effectiveness of this constraint is augmented by the provisions of paragraph 10(g) giving the plaintiff an exclusive license grant-back option outside the Licensed Territory, on future Brown inventions or improvements in Licensed Products and Technical Information, and the three-year carry-over provision in paragraph 15(f) which prohibits the licensee from manufacturing or selling any of the "Licensed Products", or direct derivations thereof, either in the licensed territory or in any other area of the world in which plaintiff or its designee is selling these products. (Tab 3, para. 10(g) and 15(f)). Since plaintiff's principal market is in the United States, this latter constraint is also imposed through the colorable power of the Larkin and Hutchings U.S. patents covering products marketed by plaintiff,

and it is similarly a misuse of these U. S. patents which directly affects competition in this country. cf United States v. International Chemicals, Inc. 105 F.Supp. 215, 221 (SDNY 1952).

While plaintiff has recently written to S. G. Brown, releasing and discharging the latter, retroactively, from any obligation under the 1965 and 1968 agreements, it is far from clear that this letter could or has dissipated the effects of the long period of inactivity plaintiff wrongfully imposed. The law is clear, however, that having set this misuse into play, it is the plaintiff's burden to show that the misuse has ended and that its effects have been dissipated. B. B. Chemical Co. v. Ellis 314 U.S. 495, 498 (1942); Preformed Line Products Co. v. Fanner Mfg. Co. 329 F.2d 265, 278-9 (6 Cir. 1964) cert. den. 379 U.S. 846 (1964).

Moreover, the alleged fraudulent procurement, unlike the license restrictions, is not curable by purging, such as by cancelling the fraudulently procured patent nine years after its grant, once the fraud has been exposed. See Kearney & Trecker Corp. v. Cincinnati Milacron, Inc. 184 USPQ 134, 152 (DC Ohio, 1974) which quotes from "Misuse and Its Purgation" by Tom Arnold that "It is equally clear that at least some antitrust violations, like fraudulently procuring and enforcing a patent, are not 'misuse' that can be purged."

In addition to the geographical constraints of the 1968 agreement, as already mentioned, this agreement contained

a total constraint against S. G. Brown selling or distributing any "equipment" weighing less than six (6) ounces and utilizing "the accoustical tube principle", unless the equipment is manufactured by S. G. Brown or purchased from plaintiff (with certain designated exceptions). This constraint extended to the United States as well as to Great Britain, and the plaintiff must also show that the effects of this further misuse have now been dissipated.

The plaintiff appears to argue that defendant should not be permitted to assert fraud or misuse as a defense, where the defendant has not been injured by the conduct in question. The law, however, is contra. See, cf Morton Salt Co. v. Suppiger Co., supra, 314 U.S. 4888, at p. 494; Noll v. O. M. Scott & Sons Company 467 F.2d 295, 301 (6 Cir. 1972), cert. den. 411 U.S. 965 (1973).

SUMMARY

In summary, the allegedly fraudulent Larkin British application is directly related to the invention for which the plaintiff seeks this Court's cognizance, and to the illegal extension of the exclusivity for this invention to virtually all of Europe. Further, the misuses projected by the plaintiff's foreign licenses, insofar as they pertain to exportation to, or manufacturing or sales activity in, this country,

are predicated solely upon the force of the Larkin U. S. patent listed in Appendix A of the 1968 license agreement and the subsequently issued Hutchings U. S. patents in suit. In return for a license under plaintiff's fraudulent British Larkin patent, S. G. Brown agreed not to export to the United States headsets and headset components defined in terms broader than the patent claims, and not to deal in these products or others in competition with plaintiff or its designees for three years after the termination of the agreement, thereby extending the scope of plaintiff's patent monopoly, and restraining trade in unpatented articles.

For these reasons the plaintiff's motion should be denied and the issues in question set over to trial.

Charles W. Bradley
COOPER, DUNHAM, CLARK, GRIFFIN
& MORAN
30 Rockefeller Plaza
New York, New York 10020
(212) 977-9550
Attorney for Defendant

February 19, 1975
New York, New York

To: Tom Arnold, Esq.
Paul M. Janicke, Esq.
Arnold, White & Durkee
2100 Transco Tower
Houston, Texas 77027

Robert Neuner, Esq.
Brumbaugh, Graves, Donohue & Raymond
30 Rockefeller Plaza
New York, New York 10020

IN THE UNITED STATES DISTRICT COURT
FOR THE SOUTHERN DISTRICT OF NEW YORK

-----	:	
PLANTRONICS, INC.,	:	
	:	
Plaintiff	:	CIVIL ACTION
	:	72 CIV 1625
v.	:	
	:	JUDGE CONNER
ROANWELL CORPORATION,	:	
	:	
Defendant	:	
-----	:	

PLANTRONICS' REPLY TO
DEFENDANT'S MEMORANDUM
IN OPPOSITION TO
PLAINTIFF'S MOTION FOR AN ORDER
GRANTING PARTIAL JUDGEMENT AND NARROWING ISSUES

Defendant Roanwell has filed an extensive memorandum opposing the narrowing of issues for trial.

But Roanwell has not challenged the facts set forth in Plantronics' motion--and those facts clearly support the granting of the motion.

Roanwell's memorandum re-confirms that the S.G. Brown agreements do not affect the patents in suit

As Your Honor pointed out in last October's conference on discovery of foreign patent documents, neither of the S.G. Brown agreements granted any license or right under any of the patents in suit.

Indeed, the two Hutchings inventions had not even been made at the time the later Brown agreement was made in 1968.

In desperate attempt to connect the U.S. patents and the contracts Roanwell urges that the foreign agreement's prohibition against exportation of British-made Plantronics headsets somehow involved the U.S. patents. This is simply not the case, as the contracts themselves plainly show.

The trial will be needlessly protracted
if this irrelevant issue is
not summarily disposed of

While the facts required to support the motion are not controverted, the facts urged in Roanwell's memorandum are controverted by Plantronics in many particulars. Since the entire issue is irrelevant, the case will be needlessly protracted by the trial of those issues.

Another example of protraction of the case by irrelevant factual controversy is this: Roanwell relies upon the 1974 recollection of Plantronics' former counsel, Mr. Chognard, as to 1964 facts (the whole story being privileged, the Court thus far carrying the privileged objection with the case). There exists privileged inconsistent writing by the same attorney written in 1965.

The avoidance of a needless trial of those types of issues when they are not at all material to the case, is what Plantronics' motion is all about.

* * *

It is undisputed that the British patent is not here in suit and the foreign contract was addressed to foreign use of technology, of know-how, and of a British patent, by which to manufacture the Plantronics' headset in England.

Since suit here is upon a United States patent not there licensed, clean hands is required only as to the United States patent.

A ruling to that effect now, prior to trial, will save the time and money of the parties and the court at trial.

Respectfully,

/s/Tom Arnold

Tom Arnold
Paul M. Janicke
Arnold, White & Durkee
2100 Transco Tower
Houston, Texas 77027
(713) 621-9100

Of Counsel:
Robert Neuner, Esq.
Brumbaugh, Graves, Donohue & Raymond
30 Rockefeller Plaza
New York, New York 10020
212 489-3300

ATTORNEYS FOR PLAINTIFF

District Court, S. D. New York

Plantronics, Inc. v. Roanwell Corporation

72 Civ. 1625 Decided Mar. 18, 1975

Conner, District Judge.

This is an action for infringement of three U.S. patents owned by plaintiff and relating to lightweight headsets of the type used by airplane pilots and air traffic controllers for voice communications. Plaintiff has moved to strike Paragraph 17 and a portion of Paragraph 18 of defendant's Answer, which allege, by way of affirmative defense and counterclaim, that the patents in suit are invalid and unenforceable because of plaintiff's "lack of candor and fraud" in securing corresponding foreign patents without calling to the attention of the foreign patent offices prior art and other bars known to plaintiff which precluded the grant of such patents, and because of plaintiff's misuse of the patents in suit by granting licenses under the corresponding foreign patents knowing them to be invalid.

I.

In support of the fraud allegations, defendant relies specifically upon the non-convention application for a British patent corresponding to the earlier utility patent in suit. This British application was not filed until August 25, 1964, almost 3 years after the filing of the corresponding U.S. application, during the negotiation of a license agreement, entered into February 5, 1965, by which plaintiff granted S. G. Brown Ltd. an exclusive license to make and sell the invention in Great Britain and five other European countries during a five-year term, once renewable, and by which plaintiff undertook to "seek patent coverage."

It has since been conceded that before the British application was filed, internationally circulated trade publications containing plaintiff's advertisements of the patented headsets had reached Great Britain. Plaintiff's former patent attorney testified on deposition that he advised plaintiff's then president, who is also the patentee of the U.S. patent involved, that this constituted a bar against obtaining a valid British patent. While plaintiff denies this testimony and belittles it as that of a "disgruntled former employee," it surrendered the British patent in 1974, some nine years after its issuance.

[1] Even assuming, without deciding, that the British patent was obtained by fraud, this would not bar enforcement of the corresponding U.S. patent here in suit.

As the U.S. Supreme Court stated in *Loughran v. Loughran*, 292 U.S. 216, 229 (1934),

"Equity does not demand that its suitors shall have led blameless lives."

[2] Thus, as I stated in *Saxton Products, Inc. v. United States Telephone Co.*, 182 USPQ 608, 609 (S.D.N.Y. 1974), the courts have consistently ruled that fraud in obtaining one patent will not render unenforceable other patents in common ownership, even where the patents cover closely related inventions.

For example, in *Beckman Instruments, Inc. v. Technical Development Corp.*, 433 F.2d 55, 167 USPQ 10 (7th Cir. 1970), cert. denied, 401 U.S. 976, 169 USPQ 65 (1971), the plaintiffs sought a judgment declaring the invalidity of a group of patents which had been licensed by the defendant to the plaintiff. The basis of the action was the alleged fraudulent procurement of one of the licensed patents. The court ruled that although the patents were of sufficiently close relationship to be included within the same licensing agreement, fraud in the procurement of one of the patents did not affect the others. The court stated that,

"if the [patent in suit] * * * is shown to be invalid, it cannot be the basis for royalties, but that does not render the entire licensing agreement an improper attempt to use patent leverage to extend the scope of the patent monopoly." 433 F.2d at 62, 167 USPQ at 15.

Noll v. O. M. Scott & Sons Co., 467 F.2d 295, 175 USPQ 392 (6th Cir. 1972), cert. denied, 411 U.S. 965, 177 USPQ 545 (1973), was an action charging the defendant with infringement of a basic patent on a crabgrass control chemical by the sale of a specific chemical known as "AMA." The defendant contended that the plaintiff was estopped from bringing such an action because in a prior application for an improvement patent it had represented to the Patent Office that AMA possessed properties unexpectedly superior to those disclosed in the basic patent, and that this representation was inconsistent with the plaintiff's present contention that the basic patent is infringed by the sale and use of AMA. Despite the close relationship of the two inventions—a generic invention and an "improvement" within the scope thereof—the court, assuming *arguendo* that the representations to the Patent Office during prosecution of the later application were false, noted that such conduct would not render the basic patent unenforceable but,

"could only invalidate the patent in whose applications the assertions were made." * * * There can be no defense based on "Misuse in the air." The misuse must be of the patent in suit. *Kolene Corp. v. Motor City Metal Treating, Inc.*,

supra, 440 F.2d at 85, 169 USPQ at 82-83. * * * 467 F.2d at 302-303 n.6, 175 USPQ at 398.

S. H. Kress & Co. v. Agnides, 246 F.2d 718, 113 USPQ 395, (4th Cir. 1957) involved a situation factually indistinguishable from that at bar. In that case, plaintiff charged infringement of a U.S. patent based on an application filed under the International Convention claiming the benefit of the filing date of a prior application in Belgium, asserting that the U.S. and Belgian applications covered the same invention. The defendant offered to show that the plaintiff had previously represented to the Canadian Patent Office that the corresponding application which he filed there did not cover the same invention as the Belgian application. Thus, the alleged fraud was perpetrated in connection with an application for a Canadian patent on the same invention covered by the U.S. patent in suit. The court ruled that such fraud, even if proven, would not bar recovery on the U.S. patent, stating:

"Whether or not on another occasion [plaintiff] * * * made an inconsistent claim in Canada to obtain a patent there, is an issue that we need not decide. If he made a misstatement there, this might bear upon the validity of his Canadian patent. It would not alter the fact that what he told the United States Patent Office was the truth and that the patent here was obtained without deception or fraud. Even if we were to assume what we are not prepared to adjudicate, that the inventor's representations to the Canadian Patent Office were untrue, this misconduct would not be so closely related to the proceedings in this country and the issuance of the patent to him here as to invalidate the grant or to constitute such unclean hands as to disentitle him to the relief he asks in this case." 246 F.2d at 725, 113 USPQ at 400-401.

Defendant's allegation of fraud by plaintiff in the procurement of the British patent corresponding to one of the three U.S. patents in suit thus does not state an affirmative defense, even if fully proven.

II.

The only substantial argument made by defendant in support of its allegation that the U.S. patents are unenforceable because plaintiff granted licenses under the British patent knowing it to be invalid, is based upon the fact that the license agreement provided that S. G. Brown Ltd., the licensee,

"agrees not to export Licensed Products outside the Licensed Territory without prior written approval from [plaintiff]."

"Licensed Products" was defined as "Headsets, Assembly Parts and Replacement Parts." "Headsets" was defined as "All models and types of headset products manufactured and marketed by [plaintiff] for general use * * *." Thus, the effect was to obligate Brown not to market in the United States headsets or parts of the types produced or sold by plaintiff. Since this obligation applied not only to patented but also to unpatented headsets, it purported to extend plaintiff's protection beyond the scope of its patents, at least insofar as concerned any threat of competition from the importation of headsets made abroad by Brown.

[3] However, whether this clearly anti-competitive provision constitutes misuse of any of the three U.S. patents in suit, under which Brown was not licensed, is another question. Fortunately, it is a question we need not decide, for the effects of any such misuse have clearly been dissipated.

The last agreement between plaintiff and Brown was terminated on August 30, 1972, shortly after the present action was filed. Moreover, even while the agreement was in force it apparently had no actual effect on the market, since it is undisputed that Brown's efforts to produce a marketable headset were unsuccessful, and it was unable to sell, even in Britain where it had an exclusive license, enough headsets to earn or pay the \$2,000 annual minimum royalty.

Under these circumstances, any misuse of the patents in suit which might have existed has been purged and its market effects, if any, long since fully dissipated. The defense of unenforceability based thereon is thus no longer viable. See *Kins*, Dissipation of Patent Misuse, 1968 Wisconsin Law Review 918.

The motion to strike is granted.

PLANTRONICS, INC.,	:	
	:	
	:	
Plaintiff,	:	CIVIL ACTION NO.
	:	72 CIV 1625
v.	:	JUDGE CONNER
	:	
ROANWELL CORPORATION,	:	
	:	
	:	
Defendant.	:	
	:	

P= A finding originally proposed by Plaintiff
D= A finding originally proposed by Defendant

* The headings in this statement have been prepared by both sides for convenience and are not part of the agreed statement. It is not agreed that any reference or source cited is admissible.

	<u>Page</u>
Wants and Needs in the Pre-Larkin Art.....	5
United Air Lines.....	5
F.A.A.....	25
Roanwell.....	31
Scope and Content of the Pre-Larkin Art.....	36
The Panel of Experts.....	36
Telex.....	42
Hearing Aids.....	44
Miscellaneous.....	46
Components were long available.....	48
Differences between Larkin's Claim and the Prior Art.....	48
Level of Ordinary Skill in the Pre-Larkin Art.....	49
Impact of Larkin in the Marketplace.....	49
Roanwell's Validity Attacks on Larkin, Not Based on Prior Art.....	50

	<u>Page</u>
Infringement of the Larkin Patent.....	52
Behind-the-Ear Headsets Before Hutchings.....	53
Plantronics' MS-43 post-auricle headset.....	53
Telex's post-auricle headset.....	53
Bell Laboratories' headbandless headset.....	54
Roanwell's post-auricle headset effort (1969)	58
Scope and Content of the Pre-Hutchings Art.....	59
Differences Between Hutchings' Claim and the Prior Art.....	61
The Hutchings post-auricle headset.....	61
Level of Ordinary Skill in the Pre-Hutchings Art..	64
Impact of the StarSet in the Marketplace.....	64
Roanwell's Defenses Not Based on Prior Art.....	69
Infringement.....	70

	<u>Page</u>
The Hutchings Design Patent.....	71
Agreed Findings Originally Proposed by Defendant..	78
Parties.....	79
Patents in Suit.....	80
Headset Models.....	81
Plaintiff's Headsets.....	81
Defendant's Headsets.....	83
Bell Telephone System Headsets.....	84
Larkin Patent No. 3,184,556.....	84
Hutchings Patent No. 3,548,118.....	92
Hutchings Design Patent Des. 218,173.....	95

PRELIMINARY MATTERS

(P-1.1) Plaintiff.

Plaintiff originated as a partnership dba Plane Aids Company. In 1961 Plane Aids was incorporated as Plantronics, Inc. From 1965 to 1973, the corporate name was Pacific Plantronics, Inc., sometimes abbreviated as P.P.I. In 1973 the name was changed back to Plantronics, Inc.

(P-1.2) Defendant.

Defendant is Roanwell Corporation, a New York corporation with principal offices in the Southern District of New York.

(P-1.3) Jurisdiction and venue.

This is an action for patent infringement. Jurisdiction and venue are not challenged and are found to be proper in this court.

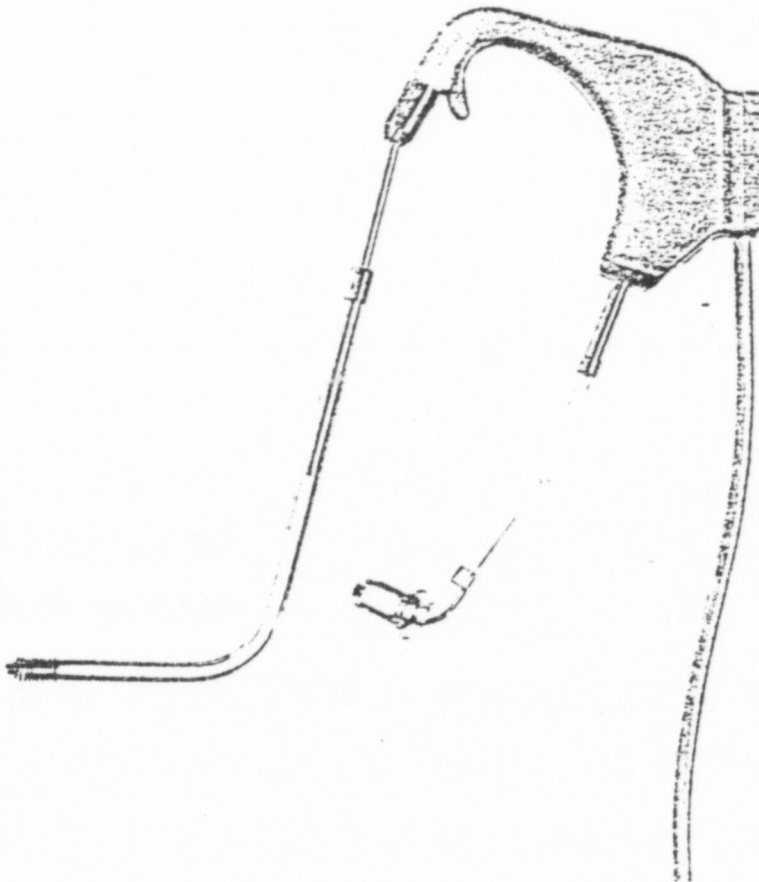
(P-2.1) Title to Patents in suit.

Plaintiff at all times has owned and held title to the three below-identified patents in suit.

(P-2.3) The alleged infringements.

(a) Roanwell Model R-70.

Claim 1 of each of three patents is charged to be infringed by the Roanwell model R-70 headset:



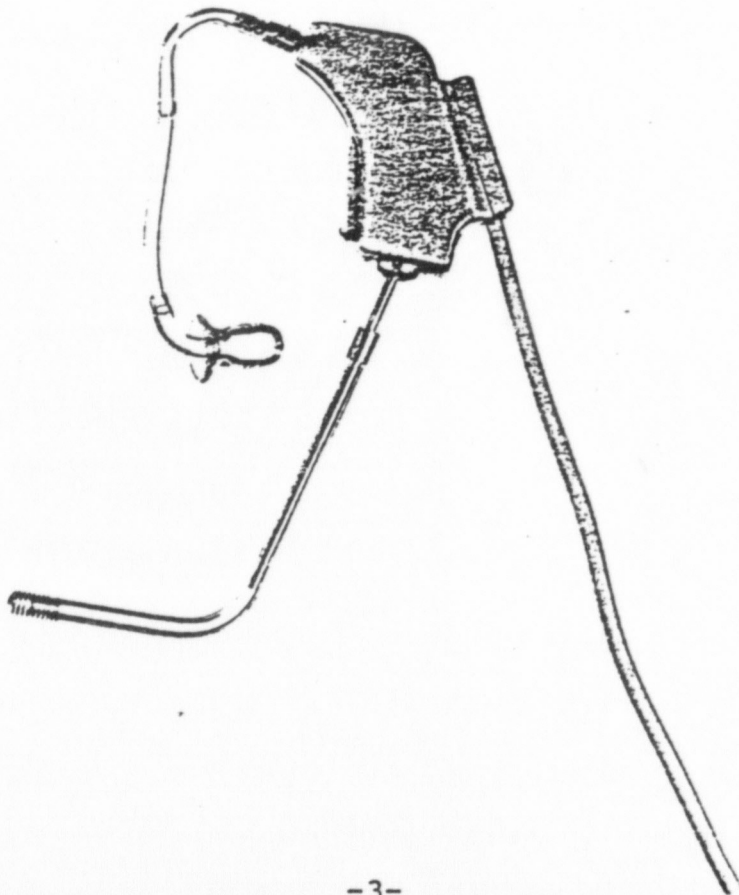
Roanwell admits that the Model R-70 infringes claims 1 through 4 of the Hutchings utility patent if valid.

Roanwell has withdrawn its earlier admission that the R-70 also infringes claim 1 of the Larkin patent, and now contests that allegation of infringement.

Roanwell denies its R-70 infringes the Hutchings design patent.

(b) Roanwell Model R-71.

The Larkin patent is charged to be infringed by the Roanwell model R-71 headset:



Roanwell denies that the Model R-71 infringes the Larkin patent.

(P-2.4) The Defenses.

Roanwell admits that the Model R-70 headset infringes the Hutchings utility patent, if it is valid, but Roanwell asserts the following defenses:

As to the Larkin patent, lack of inventorship; invalidity over the prior art; fraud on the Patent Office; unenforceability because of an alleged fraudulent filing by plaintiff of a corresponding British patent application, and because of an exclusive and restrictive European license based thereon; and noninfringement and indefiniteness of the asserted claims 1 and 2.

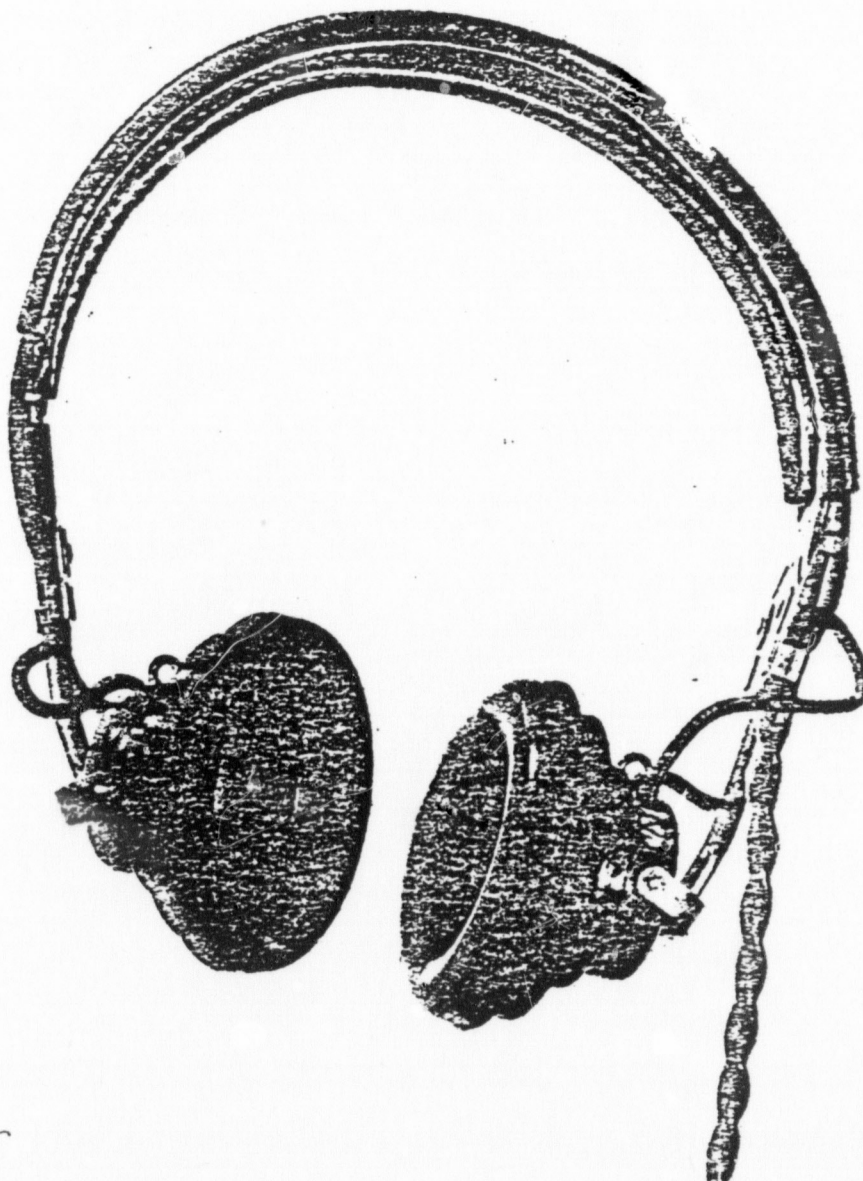
As to the Hutchings patents in suit, invalidity over the prior art; fraud on the Patent Office; double patenting; unenforceability of the plaintiff's cause of action in its entirety because of plaintiff's fraud in its filing of the British Larkin patent application and the licensing program based thereon, and because of the subsequent impact of both the Larkin and the Hutchings U.S. patents in implementing the restrictive provisions of the plaintiff's European license; indefiniteness of the claims of the Hutchings '118 patent and non-infringement of claims 5-7; and non-ornamental nature and noninfringement of the Hutchings design patent.

These are the only defenses to be urged by Roanwell at trial.

Wants and Needs in the Pre-Larkin Art

United Air Lines

(P-3.2) United Air Lines was in 1960 using a headset designated HS-33, which was a receive-only unit of the earcap or earmuff type, with the two muffs connected by a metal headband. To transmit, a hand-held microphone was used.



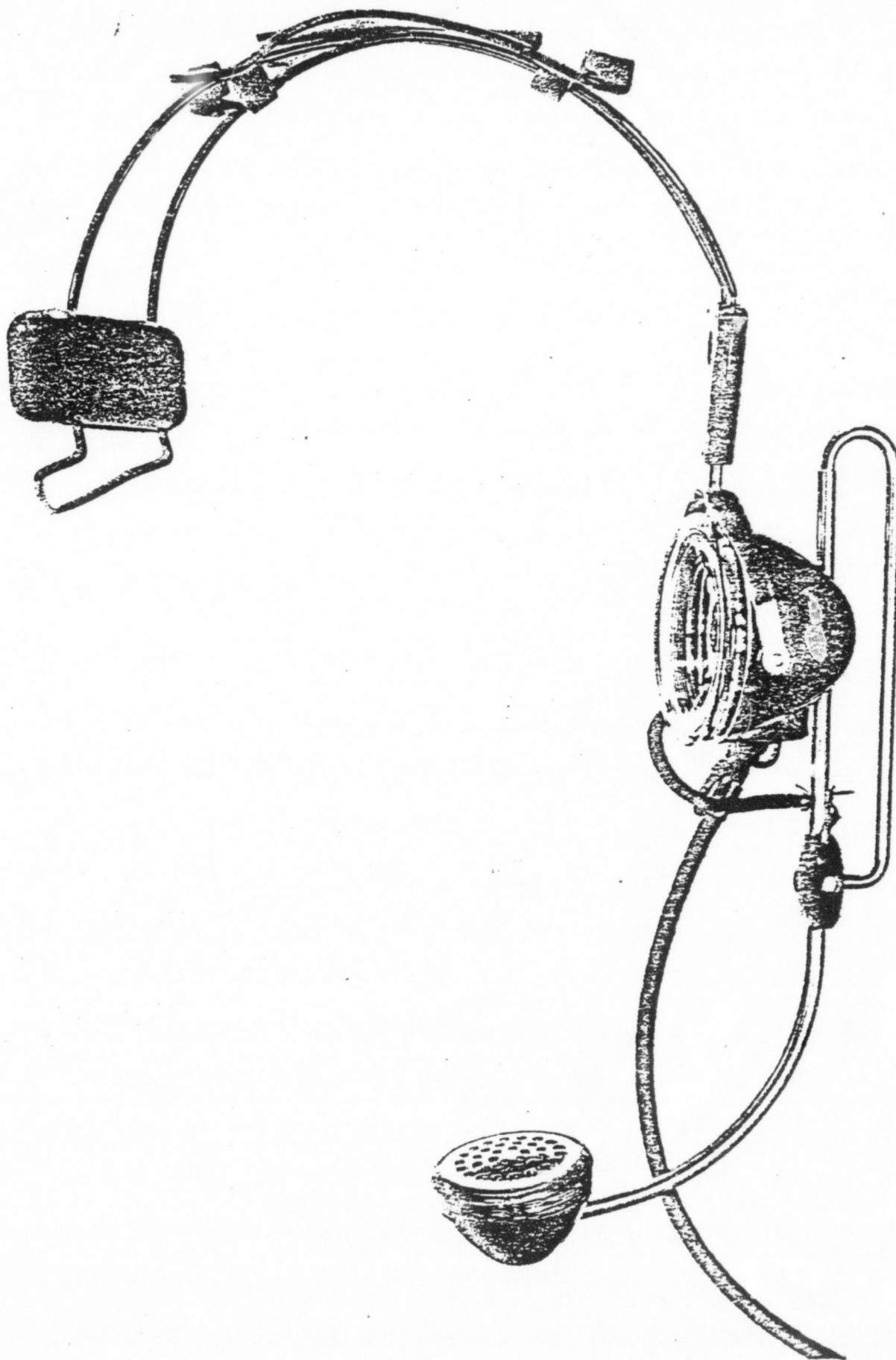
(P-3.3) In a memo of June 30, 1960, United's Engineering Vice President, Mentzer, described some of the deficiencies of the HS-33 headset and hand-held microphones:

(a) As to the HS-33 headset model, said Mr.

Mentzer: "It is large, cumbersome, and uncomfortable to wear."

(b) As to the hand-held microphone, said Mr. Mentzer: They were "relatively large, heavy, elusive and awkward."

(P-3.7) The W.E. 52 headset, weighing about half a pound, consisted of a single earphone which contained the receiver, held on the head by a metal band. The earphone was of the lying-on-the-ear "platform" type. The microphone was held in front of the wearer's mouth, by an adjustable metal boom assembly.



(P-3.8) United found the W.E. 52 headset, and a similar Telex headset, unstable: "If you moved your head around they would slide off." (Leonhardt depo. pp. 14-15)

(P-3.10) The Mentzer memo of June 1960 included a photograph of a typical eyeglasses-type hearing aid, then commercially available.



(P-3.11) The Mentzer memo also suggested a miniature or "hearing aid" approach, and included a photograph of a mockup "which may provide some of the answers."



(P-3.12) As seen in the picture, the Mentzer mockup employed eyeglass frames to support a button-type hearing aid receiver, with a microphone being suspended in front of the mouth by wires connected to the eyeglass frames.

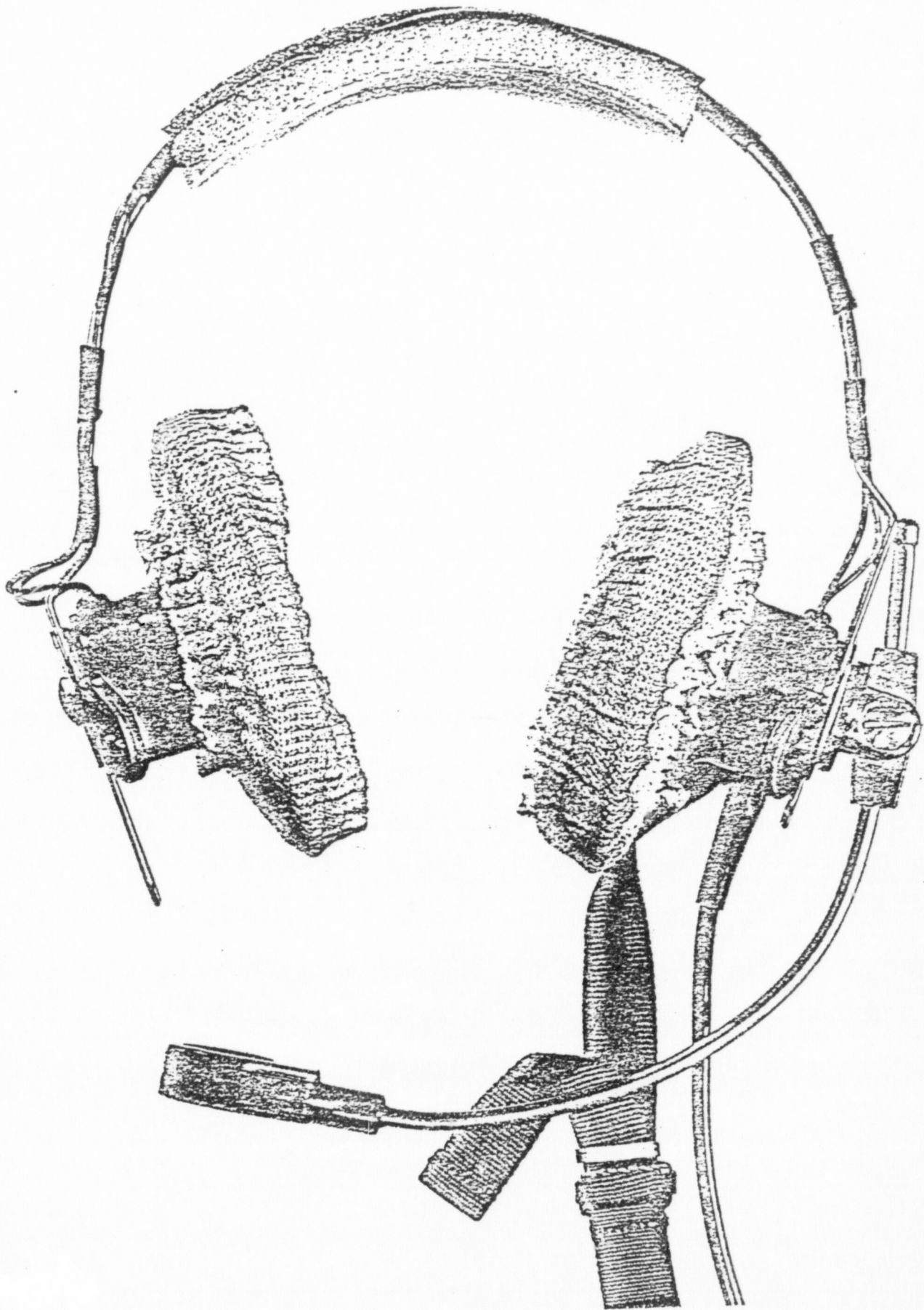
(P-3.14) The Mentzer idea was never developed beyond an inoperative mockup, was never developed into the form of a working model and was never used.

(P-3.15) Believing the Mentzer mockup proposal to be "too far off for our urgent need," his superior, J.M. Hodgson, in August 1960 ordered United's San Francisco engineering group to "review the market to determine what is available in the headphone/boom mike field," and to procure samples for evaluation. (Hodgson memo - EP 5643)

(P-3.16) The task assigned by Mr. Hodgson fell to two United engineers: Austin F. Trumbull (Superintendent of Electronic Engineering) and Merlin Leonhardt (Engineer A).

(P-3.17) Mr. Leonhardt proceeded to contact some 20 to 25 U.S. and foreign vendors in the headset field--including defendant Roanwell Corporation. Mr. Leonhardt requested information on available lightweight headsets, with transistorized amplifier and dynamic microphones. Nineteen companies replied. Twelve of the nineteen said they could not meet United's requirements; the remaining seven, including Roanwell, sent brochures or submitted sample units. None proved satisfactory to meet United's needs.

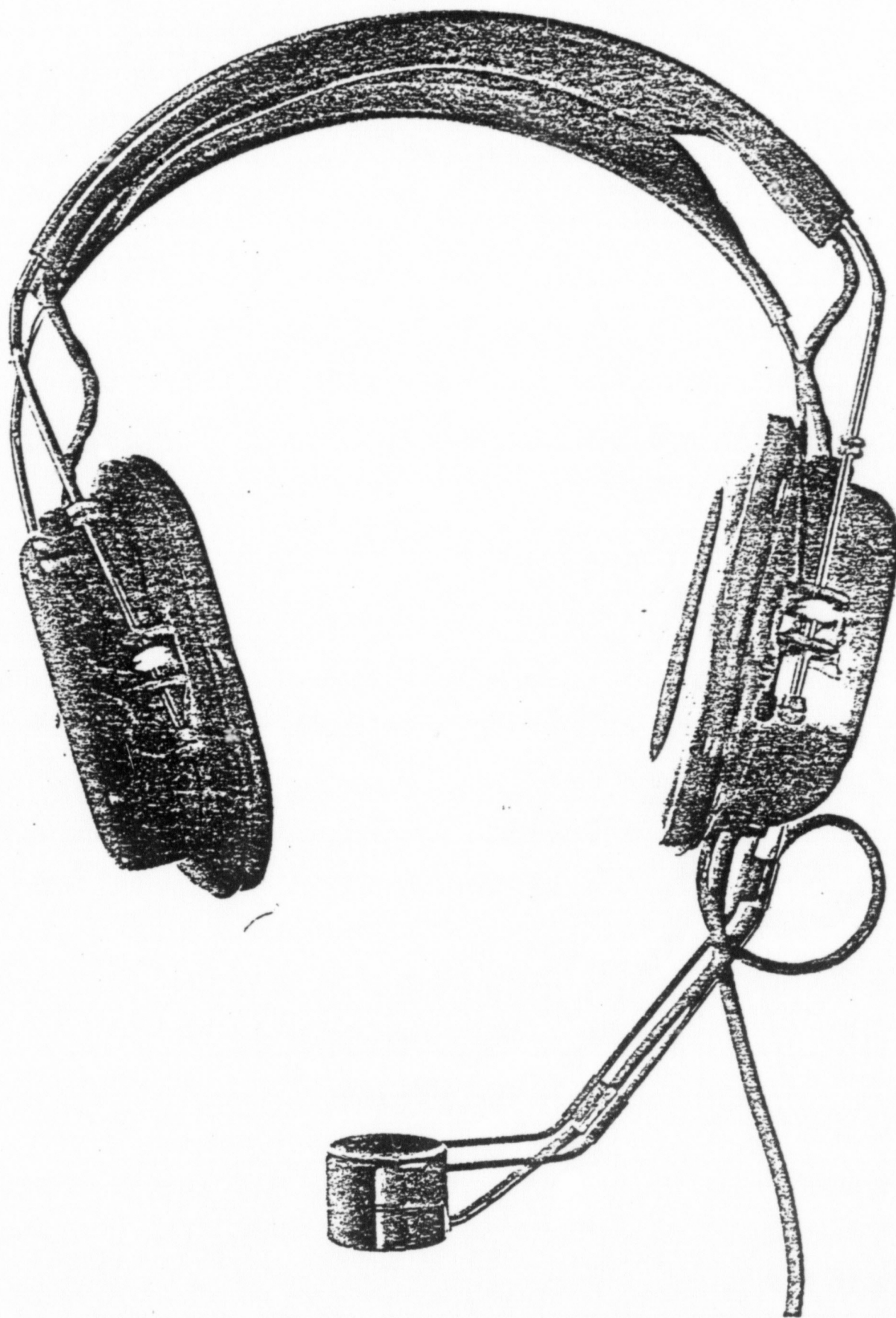
(P-3.18) One of the samples submitted was from Airmed, Ltd., of Great Britain. The Airmed unit weighed about a pound, had two circumaural muffs connected by a metal headband, and a boom microphone mounted in front of the mouth. United evaluated this headset as a good boom microphone headset for the state of the art at that time, but still too clumsy, and unacceptable for United's needs. (Trumbull depo., pp. 11-12; Leonhardt depo., p. 20.)



(P-3.19) A brochure submitted by Amplivox (EP 6077) showed a headset similar to the Airmed and called "Amplilite." Since it was so similar to the Airmed headset, a sample was not requested. Mr. Leonhardt testified that it looked fine, but it was judged unsatisfactory for the same reason as the Airmed--clumsiness--even though promoted by the manufacturer as combining lightweight wearing comfort with a robust construction.



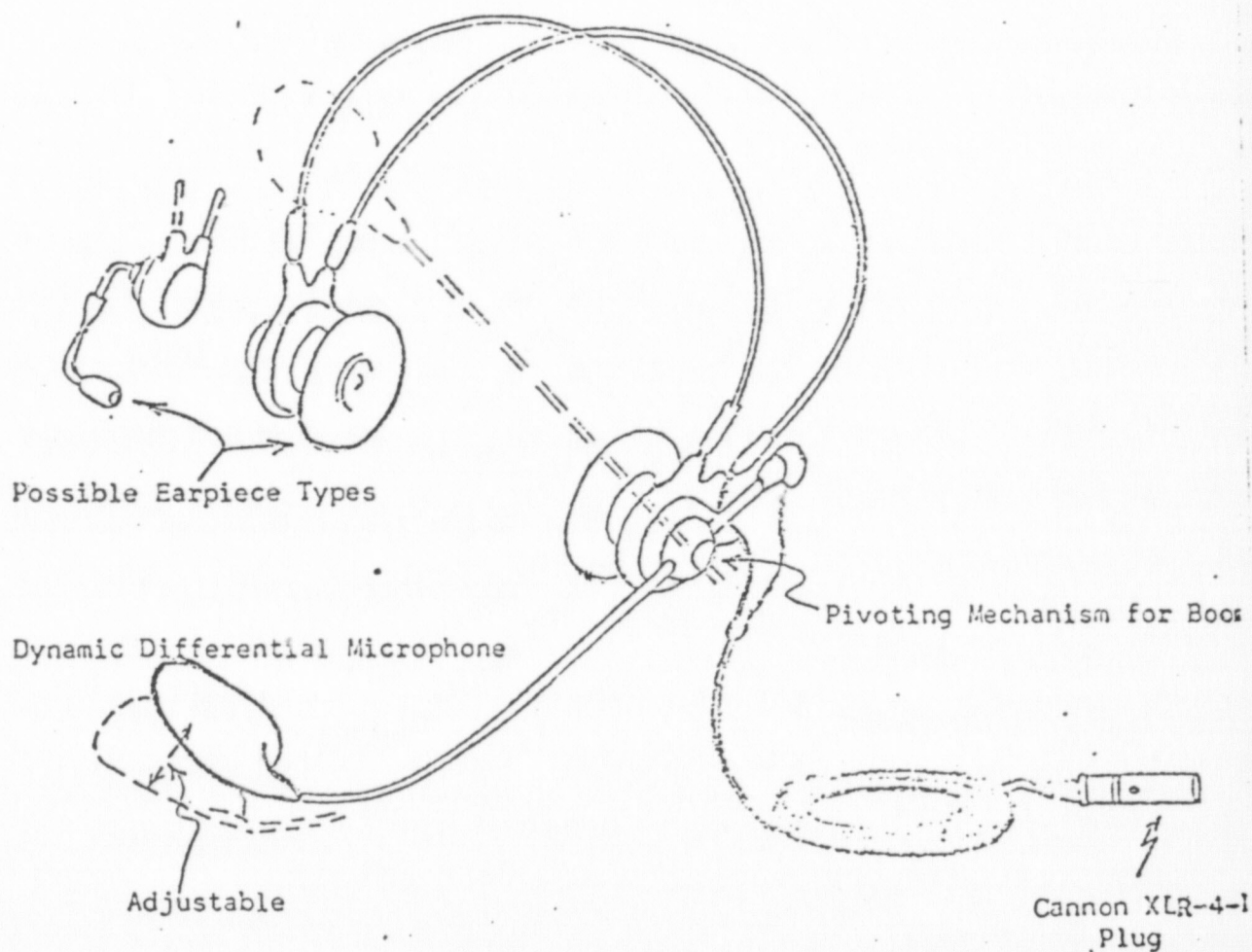
(P-3.20) Carter Engineering submitted a headset sample, also employing two ear muffs, headband and boom mike suspended in front of the mouth. United found this unit to be "very cheaply constructed" and "quite uncomfortable after one hour of wearing." It was similarly rejected by United.



(P-3.21) Defendant Roanwell submitted a brochure, but it did not disclose any new lightweight assemblies.

(P-3.22) Telephonics promised to submit a sample, but never did.

(P-3.23) Telex submitted a prototype formed of its Twinset with a boom microphone mounted in front of the mouth. This unit is similar to a drawing appearing in 1957 in a publication by Aeronautical Radio, Inc. (ARINC), a non-profit corporation organized to promote air safety.



(P-3.25) This was the state of United's search when they approached Mr. Larkin in April of 1961.

(P-3.26) Suitable stock miniature transducers, amplifiers and tubes had been available since at least 1956. Yet no one had combined them in a commercial device in a way that would satisfy United's expressed needs.

(P-3.28) (a) During 1960-61 Plaintiff's predecessor Plane Aids had been marketing an item comprising a transistor radio-mounted in the temple member of sunglasses, as shown in a Plane-Aids promotional flyer.

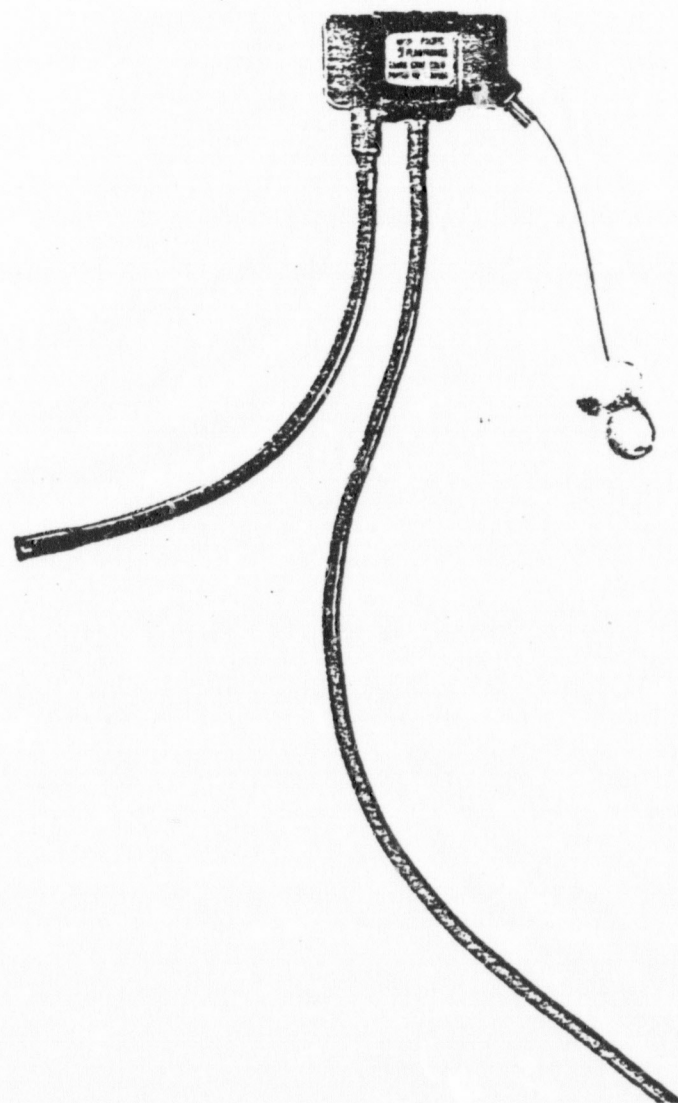
(b) The Plane-Aids radio sunglasses utilized an acoustic ear tube which extended from the temple bar extending the radio to the ear of the wearer.

(P-3.29) Upon seeing that promotional flyer, Mr. Trumbull of United, over the signature of United's Engineering V.P. Mentzer, wrote to Plane Aids in April 1961, advising that United was interested in some of the techniques involved in the radio sunglasses, but for a different application

(P-3.30) After an initial meeting between Mr. Larkin, then president of Plane-Aids, and Trumbull and Leonhardt of United, in which Mr. Trumbull explained United's needs, Plane-Aids, which shortly became the newly formed Plantronics, commenced the project (to be detailed later, 8.1-8.25) which eventually satisfied United's needs.

(P-3.31) Some 2 years later, the Plantronics headset, called MS-50, a commercial adaptation of the headset described and claimed in the Larkin patent in suit, was adopted as standard for all of United's aircraft.

(P-3.32) It was light and comfortable, not bulky, could be worn on either side of the head, had good transmission characteristics, and permitted intra-cockpit conversations.



(P-3.33) Pan American, and other airlines, subsequently followed United's lead, and standardized on the MS-50.

(P-3.34) The embodiment of this headset disclosed in the Larkin patent in suit (3,184,556) has two miniature, hearing-aid size transducers (a microphone 19 and a receiver 20) in a housing 10. The housing is clipped to the temple bar 11 of eyeglass frames, and the clip 12 itself may be detachable from the housing if desired. Speech sound is led from the corner of the wearer's mouth by an acoustic tube 26, which is positionable there. Receiver sound is led to the ear by a second acoustical tube 29, one end of which may be plugged into the wearer's ear.

(P-3.35) Claim 1 of the Larkin patent reads as follows:

"A miniaturized microphone headset employing a miniature microphone and a miniature receiver, comprising the combination of

support means for detachably supporting the miniature microphone and the miniature receiver adjacent to the wearer's ear,

a first acoustical tube,

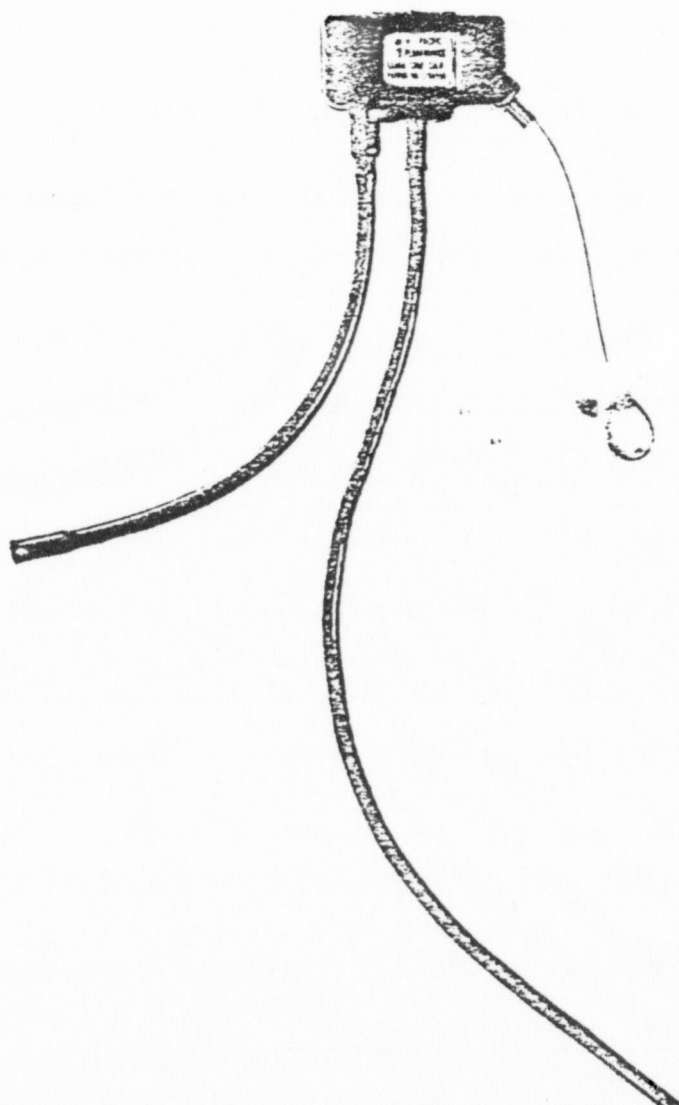
means for attaching one end of said first tube to said microphone and the other end of said first tube being adapted to be positioned adjacent to the wearer's mouth,

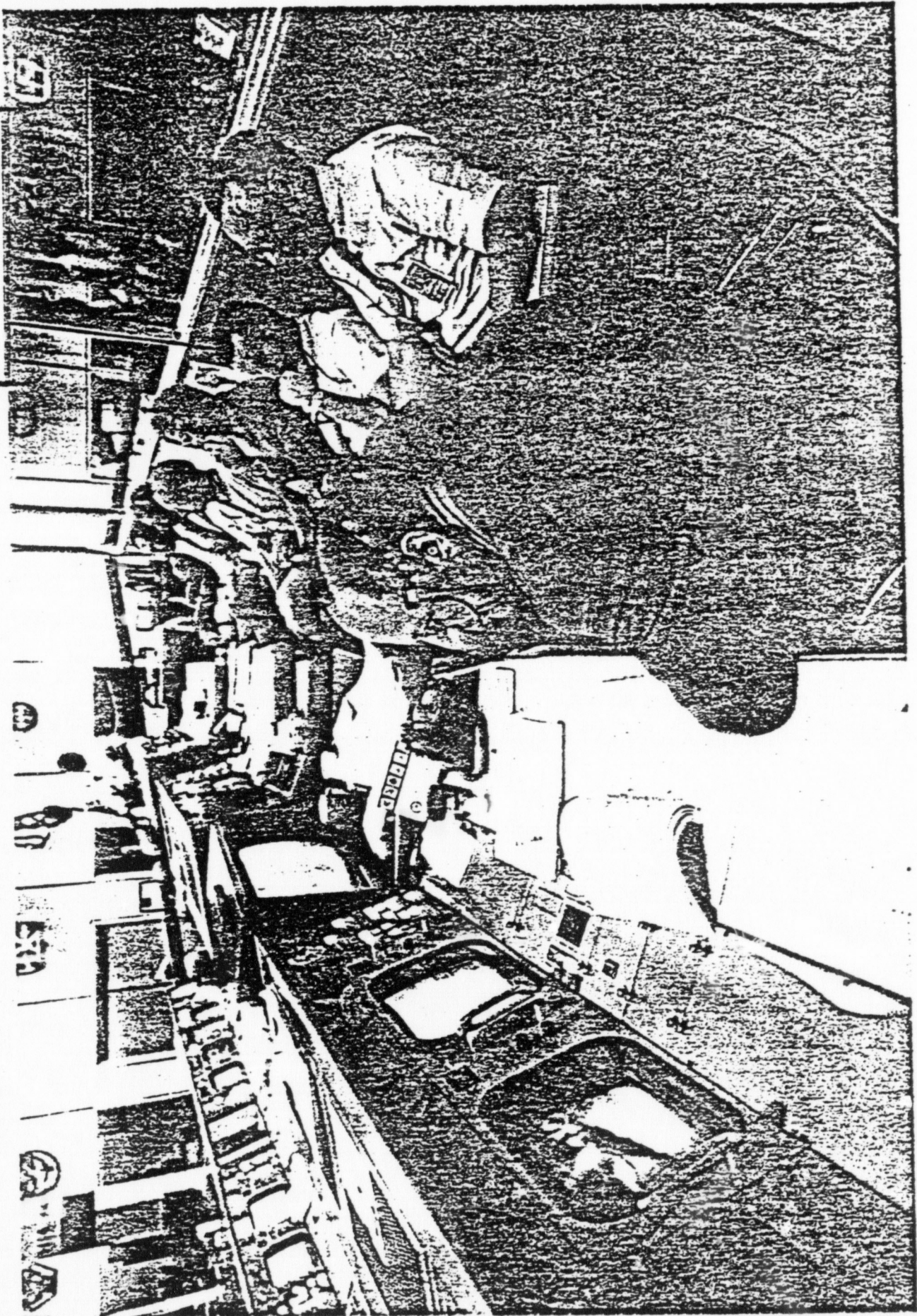
a second acoustical tube, and

means for attaching one end of said second tube to said receiver and the other end of said second tube being adapted to be plugged into the wearer's ear."

(P-3.36) Plantronics' MS-50 headset corresponds in all respects to claim 1, and is the commercial embodiment of the patented headset.

P-3.37) In actual use, the MS-50 may be worn either with eyeglasses, as shown in the patent, or with a very light plastic headband. The unit weighs only about one ounce, and is equipped with a transistorized amplifier on the microphone side, mounted in a housing half way down the line cord, and adapted to be clipped to the wearer's clothing. (Specimen and photo - EP 6100; NASA photograph - EP 10,749) It may be worn on either side of the head. Positioning of the acoustical voice tube near the corner of the mouth is accomplished by selecting a convenient location for the capsule. In this manner, the headset may be fitted to most users' head and ear geometries, rendering the headset highly versatile.





8-60-39534

(P-3.38) Roanwell evaluated the Plantronics MS-50 shortly after its commercial introduction. Roanwell's engineers concluded, and the court finds:

"It seems that Plantronics has come up with a combination of
user comfort,
low weight,
high versatility, and
adequate voice transmission
which has gained them appreciable acceptance
(Project Mercury) in a relatively short time."

(Roanwell report, Nov. 8, 1962, entitled "Analysis of Plantronics Headset")

(P-3.39) Roanwell's president and vice-president, both with many years of headset experience, felt that the Plantronics headset, "may be the basis of a new generation of headsets." (Powers memo of 12-7-62)

F.A.A.

(P-3.41) An official FAA report entitled "Development of Lightweight Headset," February 1963, describes the pre-1961 need as follows:

"For many years the Agency has sought an improved headset which could be worn by controllers for long periods of time without discomfort and yet provide adequate transmission and reception capabilities. The headsets normally issued have been described by the controllers as bulky, heavy, uncomfortable, and cumbersome. They have been known to produce headaches and sore ears after continuous wear, and have caused interference with normal activities such as eating and smoking." (FAA report - EP 6105, p. 1)

(P-3.42) In attempting to overcome these problems, the FAA had organized an in-house development effort, described in the report as follows:

"Numerous attempts have been made to provide improved headsets both by requests to the telephone companies and by investigation of commercially available items for possible use by air traffic controllers.

Several commercially available items have appeared promising and have been privately purchased and tried with some favor. Foremost of these were the Telex headsets and various hearing aid receivers which employed earpieces to fit inside the ear, thereby eliminating the earcups and pads which were a major cause of discomfort. Minor modifications were made to the currently used Western Electric Type 52 headset from time to time, but there were no major improvements.

A number of the most promising commercially available items were purchased and sent to the National Aviation Facilities Experimental Center for tests of their acoustical characteristics. The plan was to determine the most suitable transducer elements for transmitting and receiving and to develop an improved headset using these elements as a basis."

(FAA report - EP 6105, p. 1)

P-3.44 When the FAA saw the Plantronics MS-50, as stated in the official report:

"In September, 1961, representatives from Plantronics, Incorporated, came in with an idea and a proposal. The headset which they proposed to develop appeared so ideally suited for air traffic control use that the previously planned in-house development effort was discontinued."
(FAA report - EP 6105, P. 1, emphasis added.)

D-99. Mr. Rodgers explained that the previously planned in-house development effort referred to in the official FAA report was "to purchase a number of commercially available items and to study possible modifications of one or more of these devices to make it more suitable for air traffic control use and then to evaluate the resulting devices." Also, he testified that "several items were purchased, but the intended modifications were never started since the Plantronics' representatives came in with their proposal at that time."

(Rodgers depo., p. 7)

(P-3.45) The accuracy of the report insofar as it reflects the results of the Government development and evaluation study is certified by testimony of the author, G. Victor Rodgers. (Rodgers depo., p. 5)

(P-3.46) A comparative evaluation was conducted by the FAA, involving forty controllers, and included "a cross-selection of different usage, head shapes and sizes, ages, and environment." (FAA report - EP 6105, p. 4) The comparison was between the Plantronics MS-50, a "new headset" supplied by Bell Telephone Laboratories, called the Y-1, and the then-standard WE 52. (FAA report - EP 6105, pp. 3-4) The Y-1 of Bell Labs was essentially a lighter version of the WE 52, with an exponential horn in place of the WE 52's front-mounted boom microphone. It continued to have the same WE 52 earphone configuration.

(P-3.47) After several weeks' use of each of the headsets, 77% of the controllers preferred the MS-50, with 89% rating it the most comfortable. (FAA report - EP 6105, p. 7) Additionally, the controllers found the MS-50 to be more satisfactory in transmission characteristics than either the Y-1 or the WE 52. (FAA report - EP 6105, p. 7)

(P-3.48.1) The FAA in the ensuing years virtually standardized on the MS-50 for controller use.

(P-3.49.1) Mr. George Metcalfe, a NASA Communications Specialist responsible for the issuance and maintenance of headsets at Cape Canaveral, and later at the Manned Spacecraft Center in Houston, testified that he was familiar with available headsets in 1967. NASA ground controllers used the WE 52 at that time. "The fatigue problem was a major complaint." (Metcalfe depo., p. 17)

(P-3.50) After becoming aware of the Plantronics MS-50, and initial opposition by Mr. Metcalfe, virtually all NASA ground controllers adopted it. (Metcalfe depo., p. 20) Mr. Metcalfe further identified photographs depicting typical NASA use of the MS-50. He referred to the MS-50 as

"an excellent headset. It--it's lightweight. You can wear it for eight hours without caving in. And it has been a fantastic improvement over the WECO 52 headset." (Metcalf depo., p. 20)

3-00-20034



Pages 31-33 not agreed and deleted.

(P-3.55) The design effort at Roanwell in its light-weight headset project included balancing the need for stability against the discomfort caused by high spring tension in the headband. (Foley depo., p. 64)

(P-3.57) (a) A Roanwell project to copy the MS-50 began in mid-1964 and progressed for a year or more, with tooling acquired and a parts inventory purchased. (Foley depo., p. 114) For reasons unexplained by Roanwell, the project was terminated, around December 1965, before actual commercial production had begun.

(D-101) In July of 1965, six weeks after the Larkin patent issued, an attorney for plaintiff wrote to defendant indicating that plaintiff had been informed that the defendant is or may be designing a copy of the plaintiff's headset on the assumption that it was not protected by a patent, and supplying a copy of the issued Larkin patent with an admonition that any infringement of it would result in appropriate legal action. The defendant referred the matter to its patent counsel who responded in August of 1965 saying that an investigation had been made of the Larkin patent, and "It is our opinion that the claims therein defining a headset device are invalid."

(P-3.59) It was several years later, in 1969, that Roanwell, with the assistance of Unex Laboratories, of Hathorne, Massachusetts, designed the R-70 and R-71 headsets which are accused of infringing the Larkin patent.

Scope and Content of the Pre-Larkin Art

The Panel of Experts

(P-4.1) In 1956, five years before the filing date of the Larkin patent, the Air Force commissioned Western Electro-Acoustic Laboratory to bring together the views of most of the active headset R&D personnel in the country, including a "Panel of Experts" in the electro-acoustic field (Martin depo., pp. 14-15), in an attempt to solve certain voice communication problems including those of heavy, bulky headsets then in use in Air Force planes.

(P-4.2) The Panel of Experts proceeded to develop lists of:

- a) All the known transducer types.
- b) All the known methods of speech projection from the user.
- c) All the known methods of speech reception by the user.
- d) Evaluation criteria for each of the foregoing.

(P-4.3) The lists (Martin depo. ex. 3) are here reproduced:

"ACOUSTO"-ELECTRIC
TRANSDUCER TYPE

COUPLING MEANS
TO SOURCE

NOISE FIELD
EXCLUSION

1. ELECTRODYNAMIC
2. ELECTROMAGNETIC
3. RING ARMATURE MAGNETIC
4. BALANCED OR REED
ARMATURE
5. VARIABLE RESISTANCE -
CARBON
6. PIEZOELECTRIC
7. ELECTROSTATIC
8. MAGNETOSTRICTIVE
9. ELECTRONIC
10. THERMISTOR BEAD

1. AIR - EXTERNAL TO LIPS
2. PROBE TUBE TO AIR MIC.
3. THROAT CONTACT
4. LIP CONTACT
5. TOOTH CONTACT
6. AIR INSIDE MOUTH
7. EAR - DIRECT AIR
8. EAR - PROBE TUBE
9. MECHANICAL COUPLING
TO HEAD
10. LIQUID COUPLING TO HEAD
11. AIR COUPLING TO HEAD
12. CHEST CONTACT
13. AIR - TURBULATOR IN BREATH
STREAM TO ENHANCE
CONSONANTS
14. ARTIFICIAL LARYNX TO
INCREASE VOICE OUTPUT
1. PROXIMITY TO SOURCE
2. NOISE SHIELD - OXYGEN
MASK
3. HELMET ENCLOSURE
4. GRADIENT CANCELLATION
5. IMPEDANCE MISMATCH (RE-
LATIVE SENSITIVITY TO AIR
vs. SOLID TRANSMISSION)
6. HELMET WITH ACOUSTIC
WINDOW AND AUXILIARY
NOISE SHIELD TO BE PLACED
OVER WINDOW. ISOLATES
BREATHING FROM MICRO-
PHONE.
7. BAFFLE
8. TAILORING OF RESPONSE
9. CLIPPING IN TRANSDUCER
10. DIRECTIONALITY OF MICRO-
PHONE.

EVALUATION CRITERIA - (COMBINATION OF TRANSDUCER, COUPLER AND NOISE EXCLUDER)

1. NET EVALUATION OF INTELLIGIBILITY-- WORD ARTICULATION, NOISE-QUIET
2. PHYSICAL (DIAGNOSTIC) EVALUATION:
 - A. REAL VOICE FREQUENCY RESPONSE - DEFINES REQUIRED EQUALIZATION
 - B. DYNAMIC NOISE ATTENUATION
 - C. CONSONANT / VOWEL RATIO
 - D. SPEECH / DYNAMIC NOISE RATIO (CONSONANTS AND VOWELS)
 - E. SPEECH SOUND ALTERATION PROPERTIES

- A. LISTENABILITY: NATURALNESS, PLEASANTNESS (LACK OF ANNOYANCE), SPEAKER RECOGNITION, DISCOMFORT AT HIGH LEVELS (SPEECH AREA UTILIZATION)
- B. WEARABILITY - DISCOMFORT
- 4. SIZE AND WEIGHT POTENTIAL

SPEECH RECEPTION TO MAN

ELECTRO-"ACOUSTIC" TRANSDUCER TYPE

COUPLING MEANS

NOISE FIELD EXCLUSION

- | | | |
|--|--|---|
| <ol style="list-style-type: none"> 1. ELECTRODYNAMIC 2. ELECTROMAGNETIC 3. RING ARMATURE MAGNETIC 4. BALANCED OR REED ARMATURE 5. PIEZOELECTRIC 6. ELECTROSTATIC 7. MAGNETOSTRICTIVE 8. IONOPHONE 9. MODULATED AIR UNIT (MODULATE OXYGEN SUPPLY) 10. THERMOPHONE 11. ELECTROPHONICS | <ol style="list-style-type: none"> 1. DIRECT (AIR CAVITY) TO EAR 2. PROBE TUBE TO EAR 3. AIR CAVITY TO HEAD SURFACE 4. LIQUID COUPLING TO HEAD SURFACE 5. MECHANICAL COUPLING TO HEAD SURFACE 6. DISTANT AIR COUPLING (LOUDSPEAKER) 7. LOUDSPEAKER IN HELMET - WITHOUT EAR SEAL 8. LOUDSPEAKER OUTSIDE HELMET 9. LOUDSPEAKER OUTSIDE HELMET WITH CAVITY COUPLING 10. MECHANICAL COUPLING TO HELMET | <ol style="list-style-type: none"> 1. OVER-EAR CUSHION 2. SEMI-INSERT 3. FULL INSERT (HARVIN - TIP) 4. HELMET 5. EARPLUG UNDER CUSHION-MOUNTED RECEIVER 6. ACTIVE ELEMENTS (ELECTRONIC) |
|--|--|---|

EVALUATION CRITERIA

1. NET EVALUATION OF INTELLIGIBILITY -- WORD ARTICULATION, QUIET-NOISE
2. PHYSICAL EVALUATION:

- A. REAL EAR FREQUENCY RESPONSE
- B. MAXIMUM SIGNAL LEVEL
- C. NOISE ATTENUATION
- D. MASKED THRESHOLD (COMBINES A AND C)
- E. SPEECH/NOISE RATIO
- F. BEHAVIOR WITH ALTITUDE

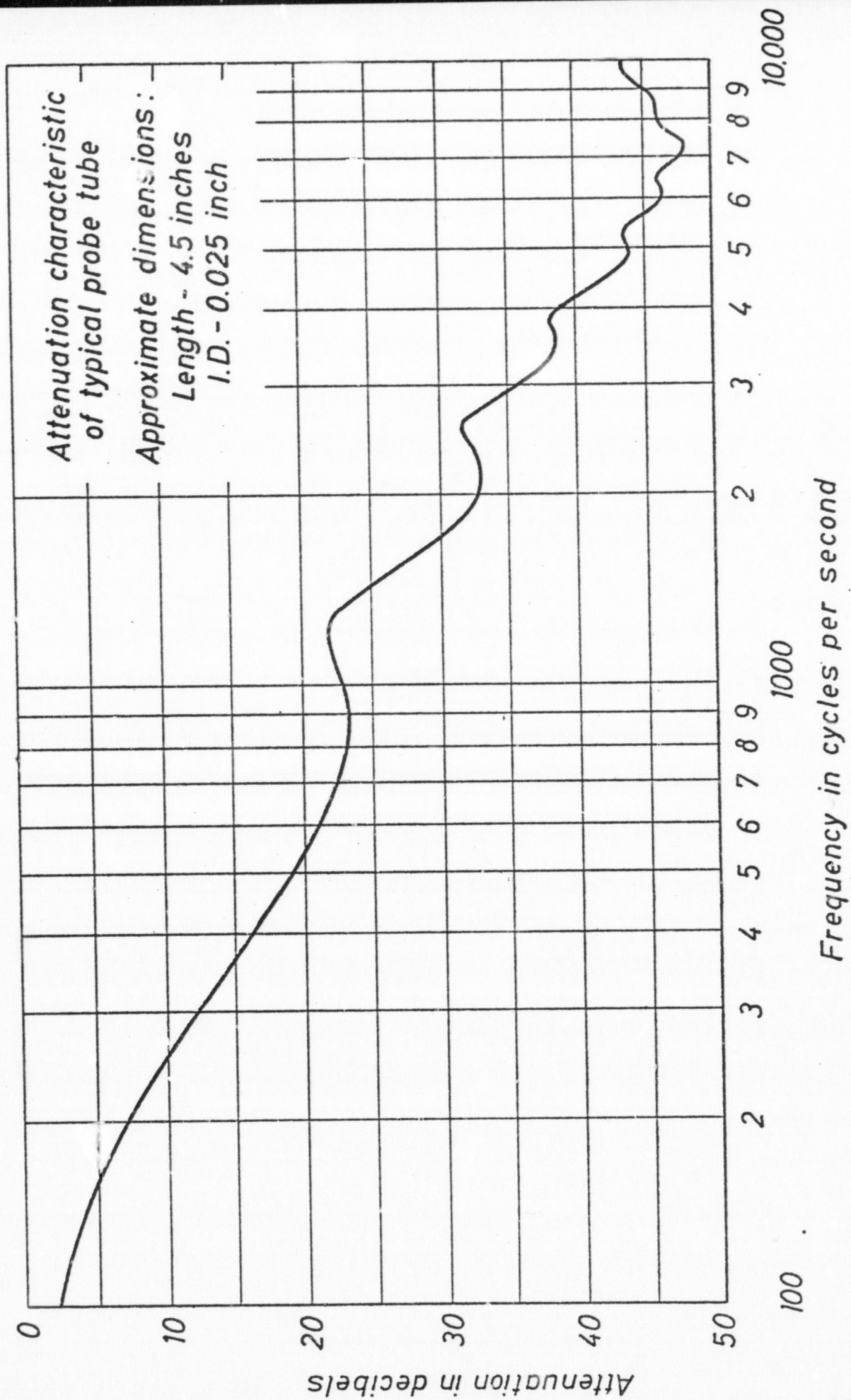
- 3. TALKER-LISTENER ACCEPTABILITY
 - A. LISTENABILITY
 - B. WEARABILITY

- G. SIGNAL SUPPLY REQUIREMENTS

- H. SIZE AND WEIGHT POTENTIAL

(P-4.4) Included in the lists are many components well known and widely used at the time (Martin depo., p. 19), including probe tubes.

(P-4.8) A typical acoustic tube has a frequency response characteristic which falls off markedly with increasing frequency in the audible range. (Beranek, Romanow) This effect is graphically shown in Fig. 16-18 of Beranek's 1949 text, Acoustic Measurements, which in 1961 was a leading work in acoustics and was widely known to workers in the art.



Beranek FIG. 16·18

Telex

(P-4.20) Gilbert discloses an early version of the Telex receive-only Twinset. As shown in the patent, sound is conducted from headband-held receivers, into the ears by means of rigid, rotatable tubes. In the commercial version of the Twinset, these tubes are telescoping and lockable, to permit length adjustment, and are acoustical tubes as understood in the art.

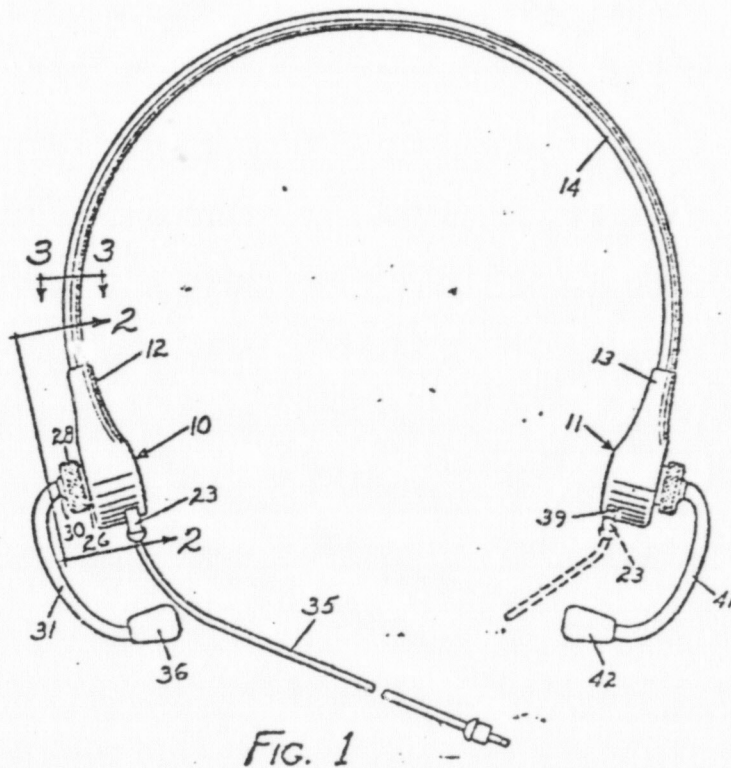
Feb. 19, 1952

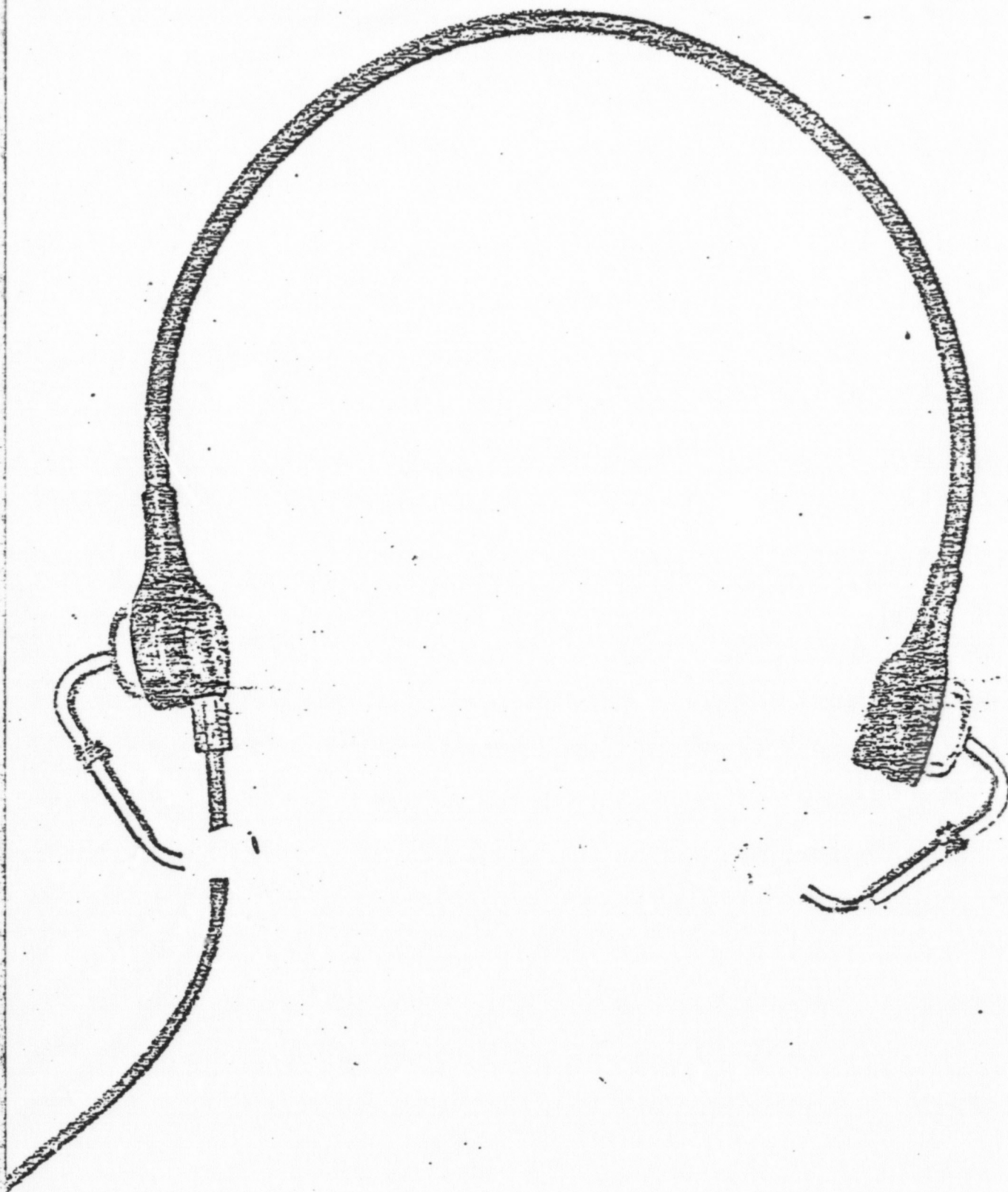
R. C. GILBERT

2,586,644

HEADSET

Filed Feb. 10, 1949





Hearing aids

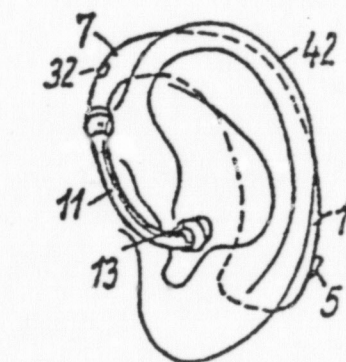
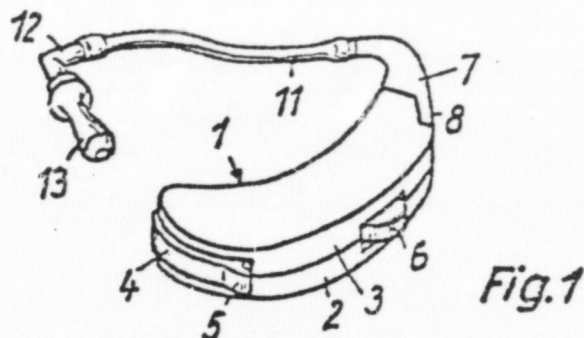
(P-4.23) Prior to 1961, post-auricle hearing aids were in common use. In Guttner and Erickson an acoustical tube conducts sound from the receiver to the ear canal.

Sept. 28, 1965

W. GÜTTNER ET AL
ELECTRICAL HEARING AID

3,209,080

Filed June 29, 1961



April 14, 1959

R. E. ERICKSON

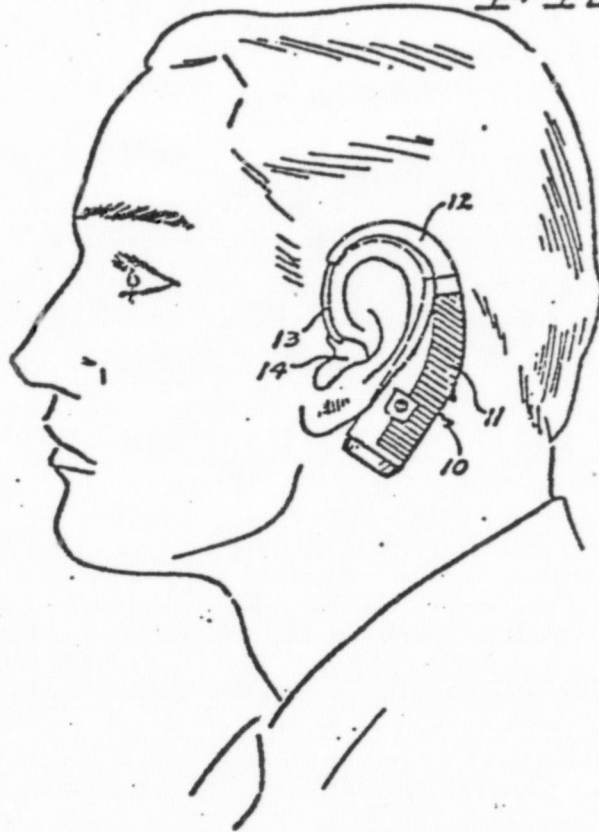
2,832,348

HEARING AID

Filed July 26, 1957

3 Sheets-Sheet 1

FIG. 1



Miscellaneous

(P-4.27) Beranek's text, Acoustic Measurements (1949), is a leading work in the field of acoustics, and has been widely and commonly known and cited since its publication in 1949. It discloses no headset configurations, but is cited by Roanwell as evidence of the level of skill of the art and knowledge of the art as of Larkin's filing date. It shows that the acoustical characteristics of probe-tube microphones were known before Larkin.

(P-4.28) (f) Kelly's Figs. 3-5 embodiment is an earmold-type hearing aid, wherein the receiver is in a housing 37. The microphone is again remote, with signals being conducted to the receiver by wires 63.

193

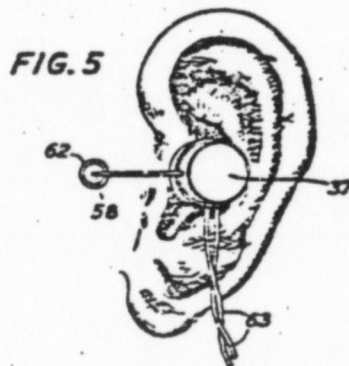
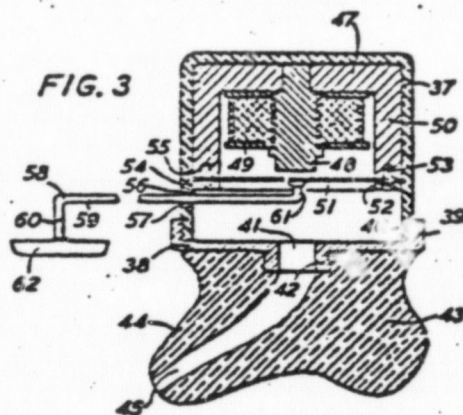
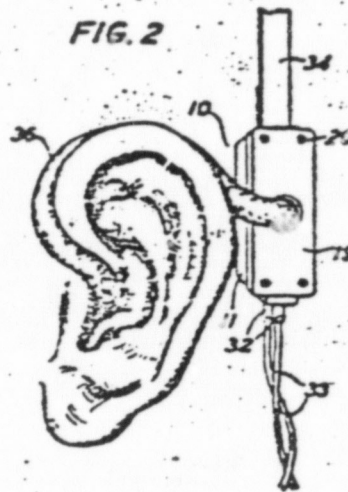
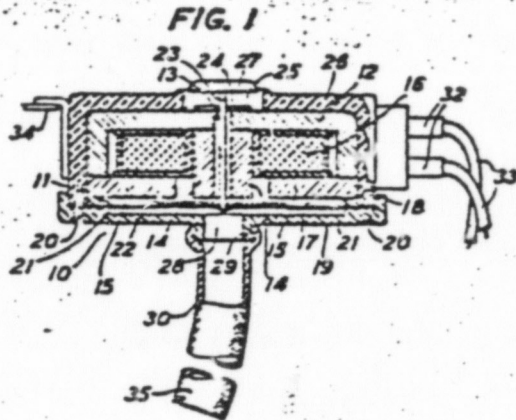
Aug. 7, 1934.

J. B. KELLY

1,969,559

ACOUSTIC DEVICE

Filed June 16, 1933



INVENTOR
J. B. KELLY
BY
Otter & Kiesel
ATTORNEY

Components were long available

(P-4.29) Miniature microphones and receivers of good quality were well known and available in the hearing-aid art for at least five years prior to Larkin.

Differences Between Larkin's Claim and the Prior Art

(P-5.1) Larkin's claim 1 reads as follows:

"A miniaturized microphone headset employing a miniature microphone and a miniature receiver comprising the combination of

support means for detachably supporting the miniature microphone and the miniature receiver adjacent to the wearer's mouth,

a first acoustical tube,

means for attaching one end of said first tube to said microphone and the other end of said first tube being adapted to be positioned adjacent to the wearer's mouth,

a second acoustical tube, and

means for attaching one end of said second tube to said receiver and the other end of said second tube being adapted to be plugged into the wearer's ear."

Level of Ordinary Skill in the Pre-Larkin Art

(P-6.1) After an evaluation of the Larkin headset, both Roanwell's president and vice-president, each with many years experience in the headset field, concluded:

"We both feel that [the Plantronics headset] may be the basis of a new generation of headsets or headset microphones." (Powers (Roanwell) memo of 12-7-62.)

Roanwell's witness D'Agostino agreed. (D'Agostino depo., pp. 20-21.)

(P-6.4) Miniature, hearing-aid type microphones had been available for years, and were known to have a rising frequency response characteristic.

Impact of Larkin in the Marketplace

(P-7.2) Over 700,000 units of the Plantronics MS-50 have been sold to date.

(P-7.10) NASA ground controllers standardized on the Larkin headset (Finding 3.50).

Roanwell's Validity Attacks on Larkin,

Not Based on Prior Art

(P-8.2) Resolution of the inventorship issue takes us back to the original United Air Lines contact with Plantronics' predecessor, Plane Aids.

(P-8.2(a)) As mentioned earlier, the task assigned by United Air Lines' vice-president for engineering (Mentzer), to look for an improved headset for pilot use, devolved upon two United employees: Austin Trumbull, U.A.L.'s Superintendent of Electronic Engineering, and Merlin Leonhardt, an Engineer. (Finding 3.16)

(P-8.3) According to Mr. Trumbull's file, the Mentzer letter to Plane-Aids, which initially established contact between Plane-Aids and United, was sent on April 17, 1961.

(P-8.4) Keith Larkin called for an appointment and then visited Mr. Trumbull and Mr. Leonhardt on April 25, 1961. Mr. Trumbull told him United Air Lines was looking "for someone interested in developing a real small lightweight headset/boom mike outfit." Trumbull noted in his file: "We discussed the factors involved." (EP 5641) Trumbull made it clear to Larkin that there was no official interest in this development at United so he could not count on financial support or orders from United, but that if Larkin "did come up with something, it would be his [Larkin's], and UAL would have no claim to it." (Trumbull file note - EP 5641)

(P-8.10) Mr. Larkin testified it was his idea, to use an acoustical voice tube and that pursuant to Larkin's express order, Bowman reluctantly assembled the unit with an acoustical voice tube. (Larkin depo., pp. 8, 12, 99-101.)

(P-8.24) Larkin testified not only that the acoustic mouth tube was his idea but also that the capsule concept was his own. (Larkin depo., pp. 102-106)

(P-8.39) Larkin's claims were always to a miniature headset combination, including at least an acoustic tube from the user's mouth to the microphone. (Larkin file history - EP 10,906, p. 9)

Infringement of the Larkin Patent

(P-9.1) After initially admitting that both its R-70 and R-71 headsets infringed claim 1 of the Larkin patent, Roanwell moved for and was granted leave to withdraw the admission.

Behind-the-Ear Headsets Before Hutchings

Plantronics' MS-43 post-auricle headset (1962)

(P-10.3) The MS-43 consisted of a post-auricle or "behind the ear" configuration, the transducers (receiver and microphone) and a transistorized amplifier being mounted in a small capsule behind the ear. The receive tube extended from the top of the capsule, around the top of the ear, terminating in a soft plastic tip. The microphone tube extended from the bottom of the capsule, passing under the ear lobe to the corner of the mouth.

(P-10.4) Plantronics contracted with Audiotone, in Phoenix, Arizona, to perform the physical design stage and prototype production of the MS-43.

Telex's post-auricle headset

(P-10.6) Another effort to eliminate the headband from lightweight headsets, was disclosed in Patent No. 3,280,273, issued to Telex, as assignor of D.W. Flygstad and others, on October 18, 1966.

Bell Laboratories' headbandless headset

(P-10.9) Development work in headsets at Bell Telephone Laboratories (BTL) prior to 1963 was concentrated mainly in the modification of Western Electric WE 52 headsets, which had long been the industry standard. The WE 52 weighed 8 or 9 ounces, and had a boom microphone, with receiver housing held against the ear by a headband. (Finding 3.7)

(P-10.12) On May 3, 1963, R.F. Davis of AT&T indicated that following, and in reaction to, the advent of Plantronics' MS-50 AT&T contemplated testing a headset of "radically different design" from the Bell Labs Model Y-1.

Pages 55-56 not agreed and deleted.

App. 117

(P-10.20) Of the four lightweight headset designs chosen by the Bell Labs group for field trials (Models A, B, C, and D), the operators preferred Model A and Model D.

(P-10.24) American Telephone & Telegraph expected Models A and D to become standard equipment for operators throughout the Bell System, the Model A to be used primarily by new and temporary employees and the Model D to be standard set for most Bell employees. The 1967 American Telephone & Telegraph Annual Report displayed the Model 61 headset prominently in a cover photograph.

(P-10.25) In October 1967, W. Schiavoni, Engineering Director of Customer Telephone Systems, AT&T, forecast a "substantially reduced" demand for Plantronics' MS-50 upon the introduction of Bell's new Lightweight headset Model 61A. In June of 1968, Western Electric Co. projected Bell System requirements for the Model 61 to be 20,000 in 1970 increasing to 45,000 in 1974.

P-10.26) In June 1968, Western Electric Co. requested quotations from independent suppliers, included Plantronics and Roanwell Corp., to manufacture the Model 61 concurrently with Western Electric's own production thereof. The contract was awarded to Roanwell.

(P-10.27) Shortly thereafter, on December 5, 1968, Roanwell Corp. issued a news release announcing its selection as the supplier for the Western Electric 61A Lightweight headset.

Roanwell's post-auricle headset effort (1969)

(P-10.32) At this time (May-June 1969) Roanwell was unaware of the over-the-ear microphone tube configuration in Plantronics' new lightweight headset, called the MS-80 or StarSec. Roanwell obtained its first concrete information on Plantronics' MS-80 on or about July 24, 1969.

(P-10.33) H.C. Potter, President of Roanwell's Communication Division, issued a tentative schedule on about September 4, 1969, calling for the completion of the "70 series" self-supporting lightweight headset by December 1969.

(P-10.34) Due to a manpower shortage at Roanwell in September 1969, Roanwell contracted with Unex Laboratories, Hathorne, Mass., to design and develop the new headset: A self-supporting lightweight headset which would not use ear-molds, headbands, or eyeglasses for support.

Scope and Content of the Pre-Hutchings Art

(P-11.7) The prior art includes many hearing aids with back-and-bottom mounted microphones, of which Roanwell has cited Erickson in which sound reaches a bottom-mounted microphone via a port 55:

April 14, 1959

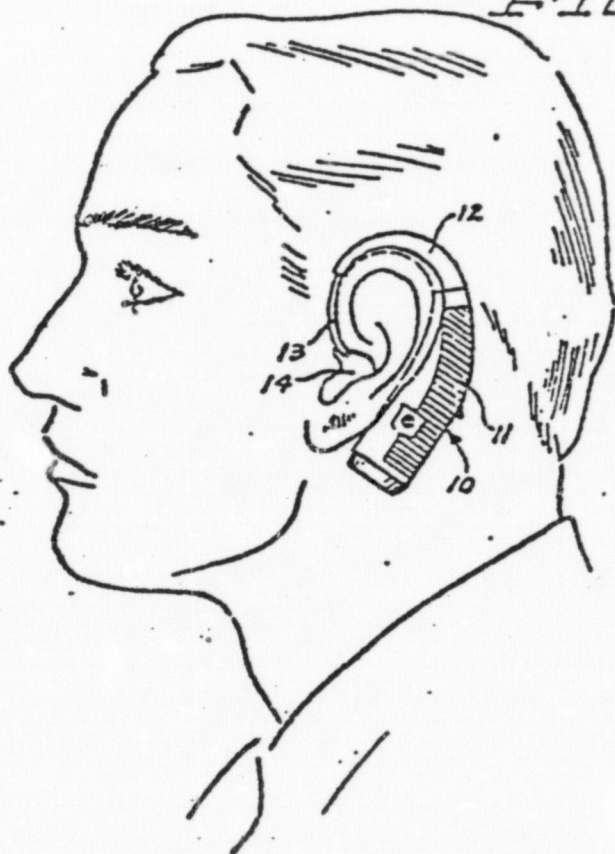
R. E. ERICKSON

2,832,348

HEARING AID

Filed July 26, 1957

FIG. 1



(P-11.8) Still other prior-art post-auricle hearing aids had microphones not top-mounted, not bottom mounted, but mounted in the ear:

(a) Huth patent, issued 1963:

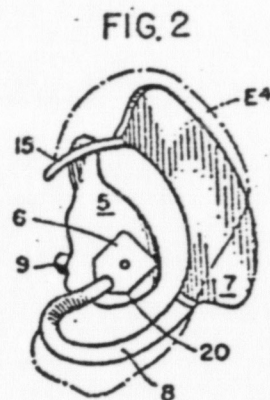
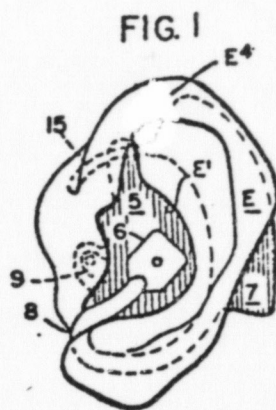
July 16, 1963

W. H. HUTH

3,098,127

HEARING AID

Filed July 3, 1961



(P-11.9) The prior art also included many non-post-auricle headsets, of which Roanwell has cited Olney, Dreher and Larkin.

Differences Between Hutchings' Claim and the Prior Art
The Hutchings post-auricle headset

(P-12.1) Plantronics had initiated its self-supporting lightweight headset project, which led to Hutchings' invention, in December 1968.

(P-12.2) Courtney P. Graham, then president of Plantronics, proposed a headset project to design a new unit requiring neither headband, eyeglass frames, nor earmold.

(P-12.4) At an engineering meeting on December 21, 1968, attended by Hutchings, several configurations for a self-supporting lightweight headset were considered:

- 1) Post auricle.
- 2) Near-the-ear directional mike with ear insert.
- 3) Receiver with directional microphone in locket hung around the neck.

(P-12.8) On January 10, 1969, Hutchings completed a drawing [EP 2419] illustrating the ball joint arrangement for the voice tube.

(P-12.9) On January 18, 1969, Hutchings prepared a layout drawing [EP 2422, EP 2172] showing the cord connection into the back of the capsule.

(P-12.10) Hutchings completed the first working model of the StarSet on February 4, 1969.

(P-12.13) Claim 1 of the Hutchings patent reads:

A headset comprising

a housing adapted to be placed behind the ear of a user, said housing including an integral upper curved extension adapted to extend over and engage the top of the ear,

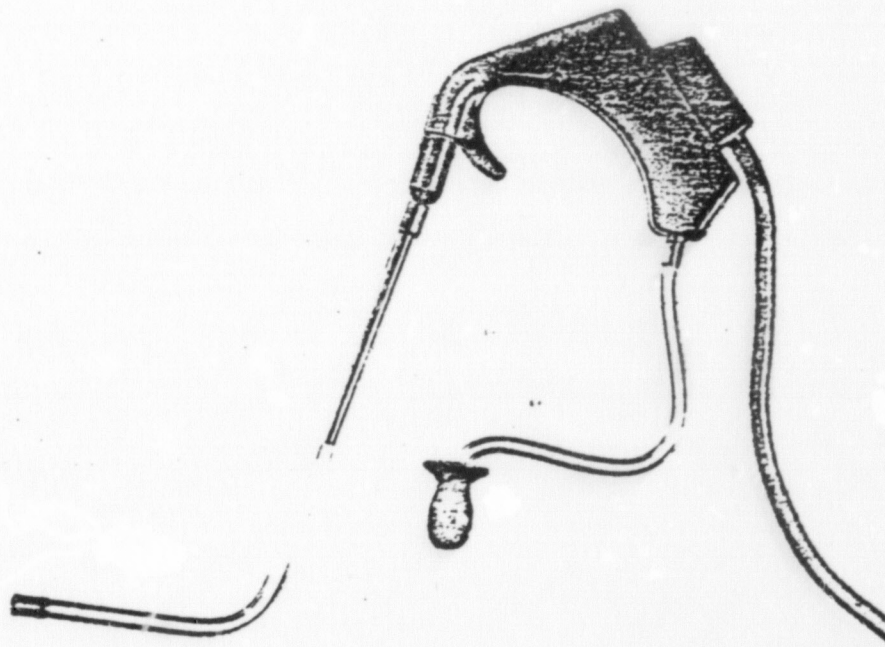
a microphone disposed in and near the top of said housing,

a forwardly extending voice tube communicating with said microphone and positionably secured to the upper extension of said housing, said voice tube being adapted to have its distal end positioned adjacent the user's mouth,

a receiver disposed in and near the bottom of said housing, and

a flexible tube secured to the bottom of the housing and adapted to provide communication to the auditory canal of the user's ear.

(P-12.13) (a) Plantronics' MS-80, or StarSet, is the commercial version of the Hutchings headset.



Level of Ordinary Skill in the Pre-Hutchings Art

(P-13.1) Hearing aids with top-mounted microphones were widely and commonly known prior to Hutchings, as evidenced by the thirteen patent and literature references cited herein by Defendant Roanwell.

Impact of the StarSet in the Marketplace

(P-14.2) Following submission of Roanwell's line of miniature operator headsets (R-61, R-70. and R-71) to the FAA in June 1970, Roanwell's sales representative, Myron Whitney, observed that the R-61 (Roanwell version of Western Electric Model 61) will ^{SP}proably have little or no application within the FAA. In 1968 the FAA had tested Bell Labs Model 61 prototypes, the result of which was an overwhelming "no" vote, based largely upon resistance to the custom-molded earpiece.

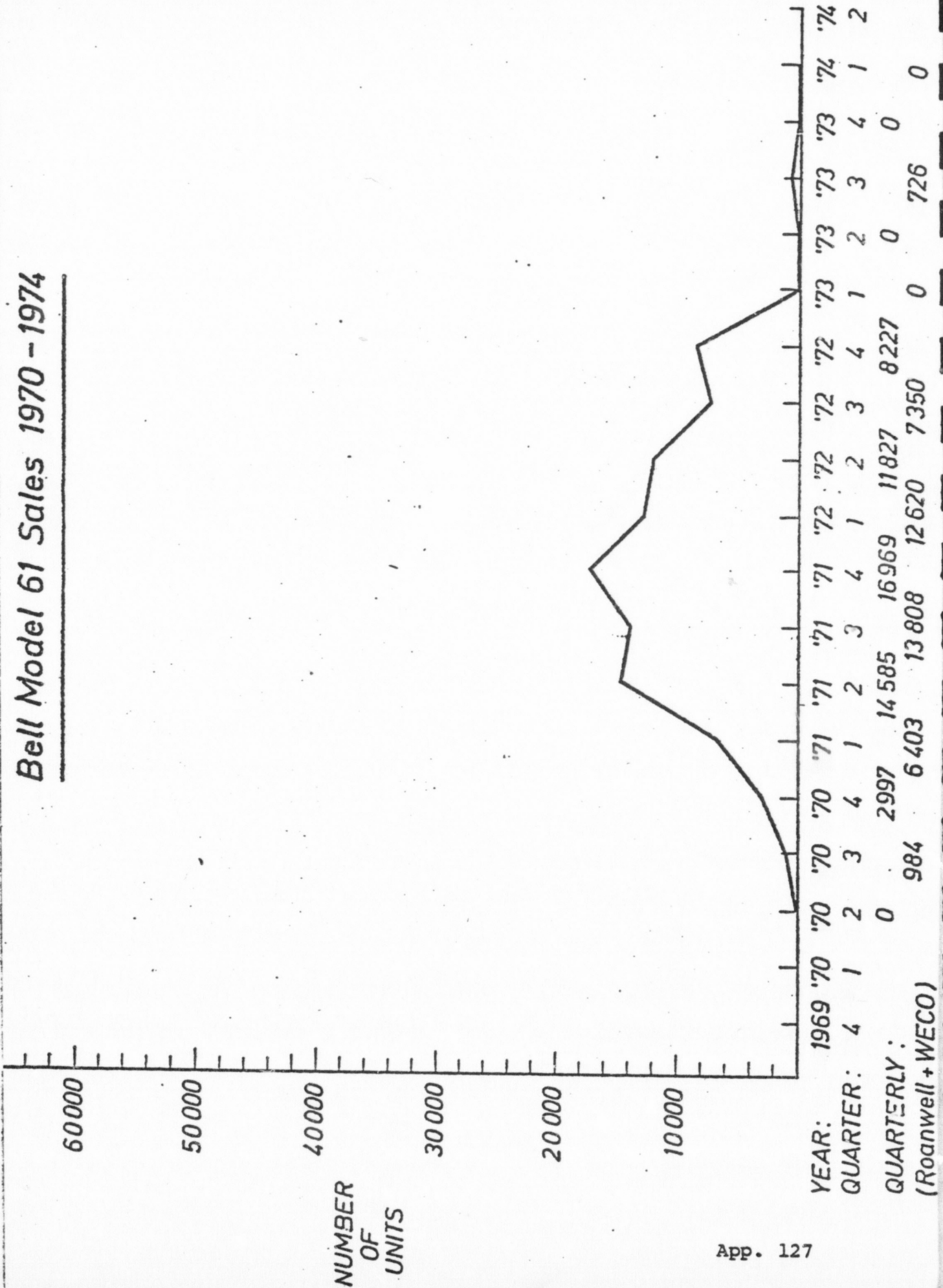
(P-14.3) In April 1972, only two years after production began on Roanwell's version of the Model 61, Roanwell anticipated that R-61A headset production levels would be "sharply reduced in the coming year relative to the levels projected at the time of our initial proposal."

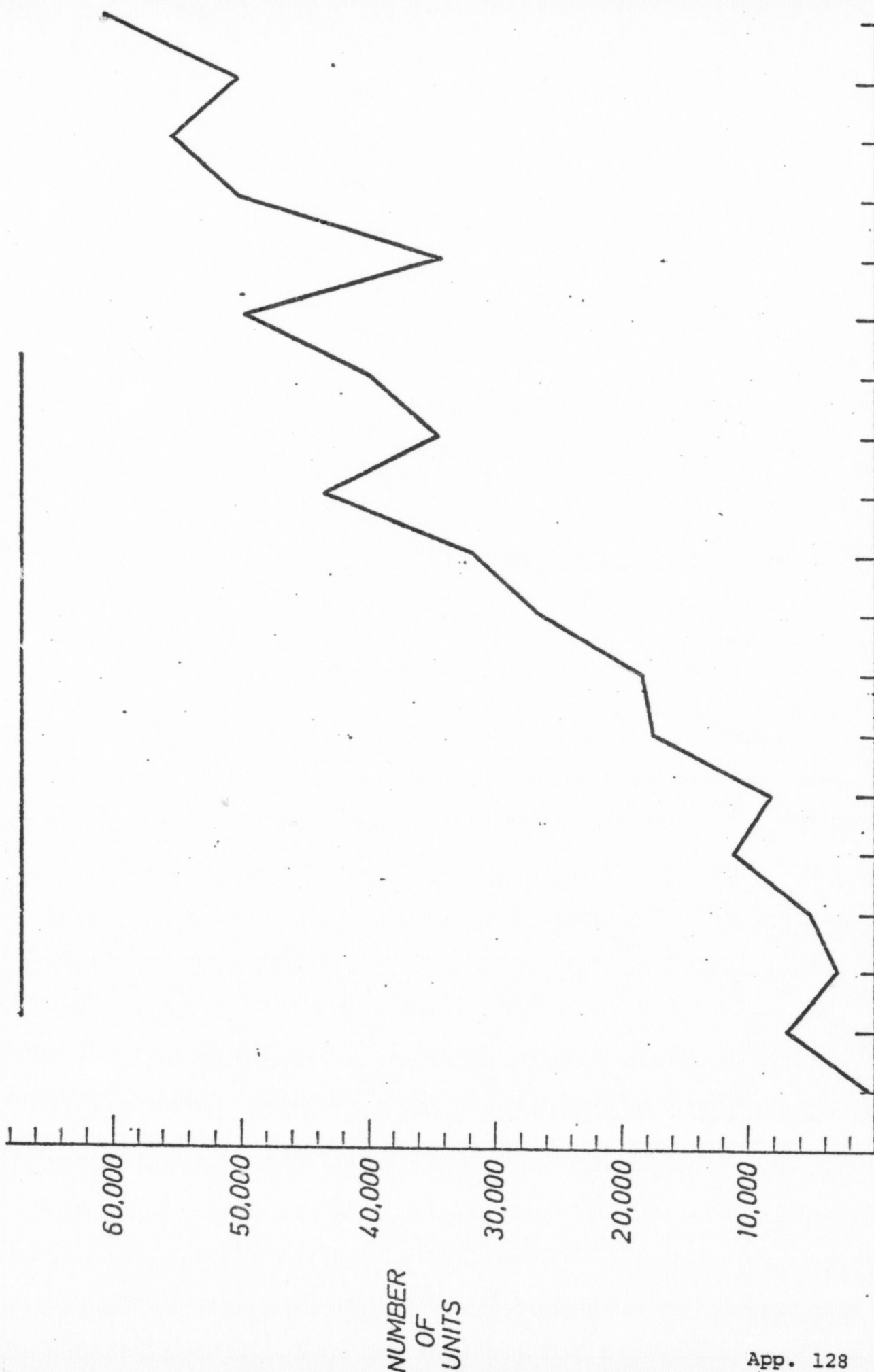
(P-14.4) In January 1973, Roanwell ceased to produce the R-61 headset for Western Electric.

(P-14.5) Western Electric production of Model 61 ceased in 1973.

(P-14.6) As model 61 sales fell, StarSet sales rose, as shown in the following sales charts:

Bell Model 61 Sales 1970 - 1974





YEAR:	1969	'70	'70	'70	'70	'71	'71	'71	'71	'71	'72	'72	'72	'72	'72	'72	'73	'73	'73	'74	'74
QUARTER:	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
QUARTERLY:	492	3,129	11,144	17,503	26,678	43,576	40,131	34,298	55,536	60,678	6753	5,244	8,155	18,568	31,760	34,287	49,520	50,080	49,181		

(P-14.7) In early 1970, Western Electric ordered 4800 of the Hutchings StarSets for field trials to be conducted in the Illinois Bell and Pacific Telephone Companies. The basic aims of the trials were to determine user acceptance, identify the scope of the market and evaluate the technical performance of the StarSet.

(P-14.8) The results of the StarSet product/market trials were highly favorable and surpassed AT&T's expectations. On March 22, 1971, the StarSet was officially made available in the Bell System to subscribers.

(P-14.9) By early 1972 the Hutchings StarSet was enjoying wide customer acceptance within the Bell system as a subscriber offering.

(P-14.11) In early 1972, after presenting the R-70 and R-71 headsets to several telephone operating companies, Roanwell observed that the R-70 headset, admitted to infringe the Hutchings patent, would be favored over the non-infringing R-71.

(P-14.16) In early 1970, Roanwell's sales representative concluded that an independent FAA evaluation showed the StarSet to be the "most suitable and acceptable instrument used to date." Based upon the evaluation, The FAA wrote to AT&T requesting that the new StarSet be made available for FAA installations.

(P-14.17) In August 1970 the StarSet received an Industrial Design Award, given for creative industrial design solutions, by the Western Electronic Show and Convention.

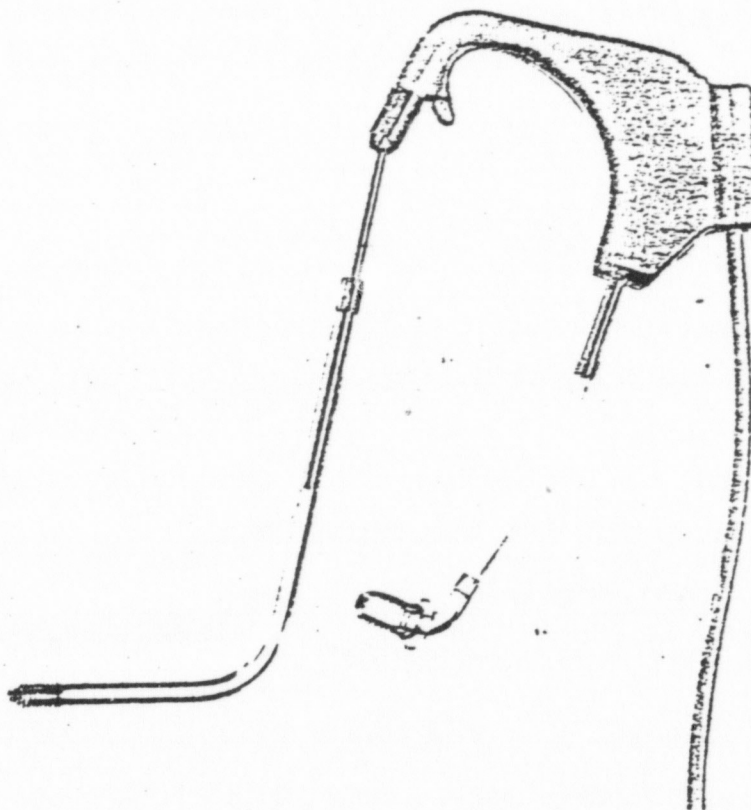
Roanwell's Defenses Not Based on Prior Art

(P-15.6) Roanwell contends the claims are indefinite, because claim 1 is allegedly inconsistent with claim 5, with respect to the relationship between the voice tube and the upper extension of the housing.

(P-15.10) Roanwell next accuses Plantronics of lack of candor before the Patent Office.

Infringement

(P-16.1) Roanwell admits that its R70 headset infringes Hutchings claims 1, 2, 3 and 4 and that the R-70 has each feature recited in those claims.



The Hutchings Design Patent

(P-17.1) The Plantronics StarSet is substantially shown and claimed in Hutchings Des. 218,173.

(P-17.6) The prior art includes post-auricle headsets and hearing aids, as cited by Roanwell.

(P-17.7) The content of the prior art includes references showing two earlier post-auricle headsets:

1) Flygstad - 3,280,273 and Des. 199,125.

2) Plantronics MS-43 headset

and many post-auricle hearing aids, e.g.,

3) Guttner - 3,209,080 and "Auriculina" ad.

4) Oticon

5) Erickson - 2,882,348

6) Weiss - 3,019,306

7) Strzalkowski - 3,035,127

(P-17.8) The Flygstad patents show a post-auricle headset having a kidney-shaped capsule and two projecting tubular members, as shown in Fig. 1 of the Flygstad design patent:

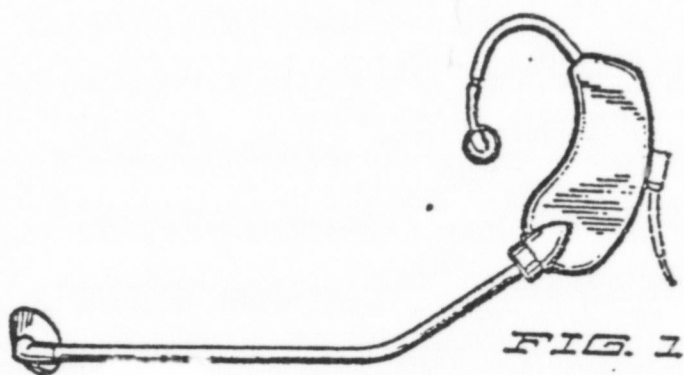
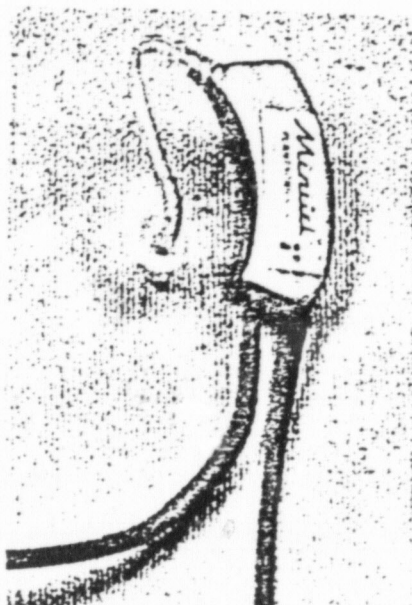
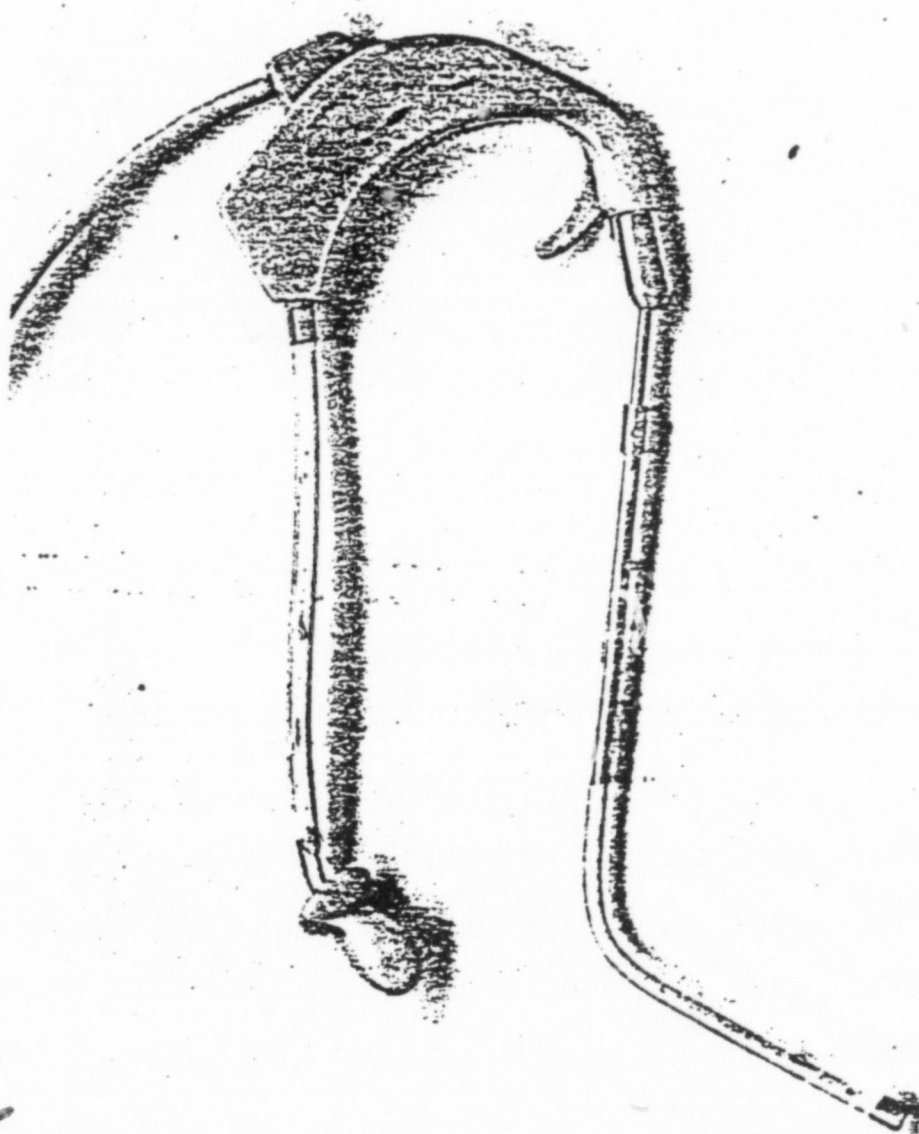


FIG. 1

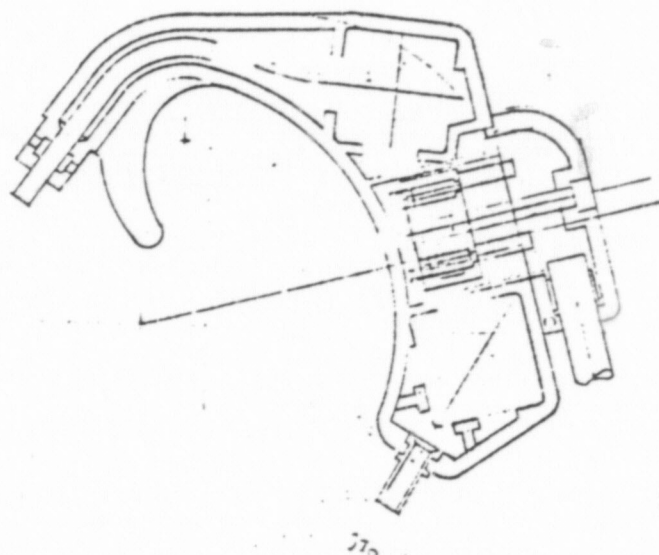
(P-17.9) The Plantronics MS-43 headset (vintage 1962), similarly follows the concentric curved approach which often characterized hearing aids in the 1960s, wherein the rear-most surface of the capsule is generally concentric with the ear-fitting surface:



(P-17.15) The first device actually fabricated by Hutchings, on Feb. 4, 1969, still contained many curves:



(P-17.16) Not until April, did the straight-line back section fully appear, but with the plug housing still curved on top:



(P-17.19) Bell Telephone Laboratories, for their model 61 headset, retained the services of the Dreyfus concern, a well known and highly regarded design organization in New York, to perform the aesthetic design work on that headset. The project was substantial, costing in the tens of thousands of dollars. The resulting 61 capsule design contained all curved surfaces, in a "teardrop" configuration.



(P-17.21) Unex Laboratories, retained by Roanwell to develop the 70-series designs, added two other possible configurations (called Layouts #4 and #5), consisting of a circular cylindrical housing, and another concentric-curve approach, respectively. Appearance was an important consideration in the project.

Agreed Findings Originally

Proposed by Defendant

(D-1) The Complaint in this case was filed on April 20, 1972 charging defendant with infringement of the following four patents:

- (1) Larkin patent 3,184,556, filed December 11, 1961, granted May 18, 1965
- (2) Hutchings patent 3,548,118, filed July 3, 1969, granted December 15, 1970
- (3) Hutchings design patent Des. 218,173, filed June 16, 1969, granted July 28, 1970
- (4) Jensen patent 3,604,069, filed April 1, 1970, granted September 14, 1971

(D-2) The Larkin and Hutchings patents relate to headsets for use in voice communication systems, and the Jensen patent to a clip for restraining the cord of the headset.

(D-3) The Complaint was filed against the present defendant and two of its subsidiaries, but in an Amended Complaint, filed October 12, 1972, defendant's subsidiaries were dismissed as parties, and the Jensen patent was withdrawn from the suit.

(D-4) In its initial Answer, and its subsequent Answer to the Amended Complaint, the defendant asserted noninfringement, invalidity and unenforceability of the patents then in suit, and included a counterclaim seeking a declaration of noninfringement, invalidity and unenforceability. A count for an alleged interference with defendant's business had been included in the initial Answer but it was not included in the Answer to the Amended Complaint.

Parties

(D-5) The plaintiff, Plantronics, Inc., was formerly known as Pacific Plantronics, Inc., and is at times referred to as "PPI". Plaintiff is a corporation of the State of California having its headquarters at Reed Street, Santa Clara, California, and its principal business is the manufacture and sale of headsets.

(D-6) The defendant, Roanwell Corporation, is a corporation of the State of New York having its principal place of business at 180 Varick Street, New York, New York 10014. It is also in the business of the manufacture and sale of headsets.

Patents in Suit

(D-7) The Larkin patent 3,184,556 concerns a headset which utilizes a microphone and a receiver located in a small housing or capsule 10, shown for example in Figs. 1, 2 and 4, with a hollow acoustic tube 26 extending from the microphone to the mouth of the wearer, and a second hollow acoustic tube 29 extending from the receiver into the ear. The disclosed headset includes a spring clip 12, shown in Figs. 6 and 7, by which the capsule can be clipped onto the temple bar of a pair of eyeglasses or onto a headband. Also, it includes conductors 44 running from the capsule 10 to external communications equipment.

(D-8) As shown in Fig. 1 of the Larkin patent, the disclosed headset can be used in connection with an oxygen mask, but such an arrangement is not involved in this suit.

(D-9) The Hutchings patent 3,548,118 involves a behind-the-ear or post-auricle headset which includes a housing 14 having a hook-shaped projection 17 to suspend the remainder of the housing behind the wearer's ear. Also, it includes a microphone 31 and receiver 36 within the housing, as shown in Fig. 3, together with a voice tube 18 extending above the ear,

from the microphone to the wearer's mouth, and an ear tube 19 extending below the ear, from the receiver to the wearer's ear canal. In the headset of Fig. 3, the voice tube has telescoping sections 18a and 18b, and it is mounted at its end in a ball and socket connection 23, 24 to facilitate its adjustment to the proper location on the wearer.

(D-10) The Hutchings design patent Des. 218,173 concerns the allegedly ornamental configuration of a headset such as disclosed in the '118 patent.

Headset Models

(D-11) For convenience, we note the following model numbers have been assigned to headsets either by the plaintiff or the defendant or someone else:

Plaintiff's Headsets

MS-40 is a microphone-only headset which comprises a clip-on housing or capsule containing a microphone, with a voice tube extending from the microphone to the wearer's mouth.

- MS-43 is a behind-the-ear headset which was constructed by Audiotone for the plaintiff in 1962, but never carried in plaintiff's commercial product line. It includes a microphone and receiver in a behind-the-ear casing, together with a voice tube extending under the ear to the wearer's mouth and an ear tube extending over the top of the ear into the ear canal.
- MS-50 is a commercial version of the headset of the Larkin patent in suit. It includes a clip-on housing or capsule containing both a microphone and receiver, together with a voice tube extending down to the wearer's mouth and an ear tube extending into the ear.
- MS-50A-S This number was also used for the behind-the-ear headset designated Model MS-43 in a letter by Mr. Larkin dated January 15, 1962.
- MS-51 is an earmold type headset, wherein the microphone and receiver are contained within a housing supported on an earmold plugged into the ear, and a voice tube extends from the microphone to the wearer's mouth.

MS-55 is a headset which includes at least one earmuff positioned over the wearer's ear, with a housing containing a microphone and receiver, together with a voice tube extending from the microphone to the wearer's mouth.

MS-56 is a headset very similar to the MS-55, except that it includes a double acoustic tube for noise cancellation purposes.

MS-60 is a receiver-only headset which employs a clip-on housing or capsule containing a receiver, but no microphone, together with an acoustic tube extending from the receiver into the wearer's ear.

MS-80 also known as the StarSet, is a commercial version of the behind-the-ear headset of the Hutchings patents in suit, wherein the voice tube extends over the ear to the wearer's mouth and the ear tube extends under the ear to the wearer's ear canal.

StarSet is the same as the MS-80.

Defendant's Headsets

R-61 is an earmold type headset like plaintiff's MS-51, wherein the microphone and receiver are contained within a housing supported on an earmold plugged into the ear, and a voice tube extends from the microphone to the wearer's mouth.

R-70 is a behind-the-ear headset wherein the voice tube extends over the ear to the wearer's mouth and the ear tube extends under the ear to the wearer's ear canal.

R-71 is a behind-the-ear headset wherein the voice tube extends under the ear to the wearer's mouth and the ear tube extends over the top of the ear into the ear canal.

Bell Telephone System Headsets

Model D is an earmold-type headset which was the forerunner of the Model 61.

Model 61 is an earmold type headset as identified for the Roanwell type R-61, these units being identical, since the prefix "R" merely indicates a unit supplied by Roanwell.

Larkin Patent No. 3,184,556

(D-12) In 1960 and part of 1961, Mr. W.Keith Larkin was a principal of a company called Plane-Aids Company, which was importing and selling sunglasses containing transistor radios--the radio being located in one of the temple bars of the glasses, with a short sound tube extending from the temple bar into the wearer's ear for listening purposes.

(D-13) In the Fall of 1960 United Air Lines decided to procure lightweight headsets for its pilots in order to reduce the size and clumsiness of the headsets then being utilized. The headset was to include a microphone, rather than using a separate hand-held mike, to free the pilot's hands for the increased traffic being experienced with the jet aircraft. At the time, United Air Lines contacted some 22 suppliers, but none had a totally satisfactory unit or would agree to develop one.

(D-15) In April of 1961, Mr. Trumbull/saw an advertising flyer for the Plane-Aids radio-containing sunglasses and wrote to Plane-Aids indicating that he had "another possible application of some of the techniques involved" in this device, and suggested that if the Plane-Aids people were interested they might stop by to see him when they were in the area.

(D-16) About a week later, Keith Larkin visited Mr. Trumbull at the United Air Lines premises in San Francisco, and Mr. Trumbull advised him that they were looking for someone interested in developing a lightweight headset with a boom microphone. Mr. Larkin said he would consider the various factors involved. Mr. Trumbull advised him that there was no official interest in this development at United Air Lines, and that therefore Mr. Larkin could not count on any financial

help from United, or even any orders if he came up with such a headset, but if he did come up with something United Air Lines would have no claim to it.

(D-17) Mr. Larkin expressed an interest in the project and shortly thereafter, in early June of 1961, he submitted photographs to United Air Lines showing an eyeglass frame similar to the sunglasses that had been sold by Plane-Aids, with a similar ear tube extending from the temple bar to the wearer's ear, but with a balsa wood mock-up of a small microphone on a boom extending downwardly from the temple bar to the mouth of the wearer. In an accompanying written description entitled "MINITEL" Mr. Larkin stated that "The spectacle mounting was suggested by Mr. Trumbull as most suitable."

(D-18) Prior to the June submission to United, Plane-Aids retained an electronic technician by the name of Mr. William Bowman. Plane Aids then set about making a working unit. Also, prior to the June submission Plane-Aids became incorporated as Plantronics, Inc.

(D-20) A first prototype unit utilizing such a sound tube for the voice, in addition to the short tube to the ear, was delivered to United Air Lines in early July of 1961, by Larkin, Bowman and a Mr. Courtney Graham. Mr. Graham was a pilot for United at the time, and he was also associated with Mr. Larkin in Plantronics, Inc. and its predecessor, the Plane-Aids Company.

(D-21) The first prototype included a pair of commercially available hearing aid eyeglasses, which the witnesses referred to as the Dahlberg unit, with an internal receiver in the temple bar connected by a sound tube to an eartip--together with a small microphone transducer bracketed to the temple bar, to rest in the vicinity of the wearer's cheekbone, and a short sound tube running from the microphone to the wearer's mouth. Mr. Trumbull reviewed the unit and supplied criticisms, including a recommendation that the mike should be located within the temple bar, rather than being bracketed to it, and an acoustic tube type pivot-swivel used.

(D-104(a)) After Trumbull and Leonhardt had reviewed the first prototype unit, delivered by Plantronics on July 3, 1961, which had a separate microphone housing bracketed to the temple bar of the glasses, and located adjacent the wearer's cheek, they listed the various criticisms they had, and Mr. Trumbull passed these along to Mr. Graham by

telephone on July 10, 1961. This listing is still in the files of United Air Lines.

(b) Mr. Graham then asked Mr. Trumbull to put the comments on the first prototype in writing, and consequently Mr. Trumbull wrote to Mr. Larkin on July 18, 1961 stating that:

"The microphone should be mounted inside the glasses bow, and the boom swivel improved. The boom on the sample is already so loose that it will not stay in position." (underscoring copied)

(D-22) In early August of 1961 Plantronics delivered a second prototype to United Air Lines. This was made from a pair of Maico hearing aid eyeglasses, which had both the microphone and receiver in one of the temple bars, with a sound tube running to the ear--and an added sound tube to the mouth. A picture of Mr. Larkin wearing this unit appeared in the Santa Cruz Sentinel of August 6, 1961.

(D-24) During all of this time Mr. Bowman was working for Lockheed Aircraft and had an employment agreement requiring him to assign all of his inventions to Lockheed.

(D-25) On December 11, 1961, a patent application was filed in the name of Keith Larkin, as the sole inventor of the Plantronics headset, and this application ultimately issued as the Larkin patent in suit 3,184,556.

(D-26) This Larkin application, as originally filed, claimed a miniature headset employing a microphone of the type used in hearing aids, together with means for detachably supporting the microphone adjacent the wearer's ear and an acoustic tube extending from the microphone to the wearer's mouth, the tube being proportioned to improve the response of the microphone.

(D-27) The Patent Office, however, rejected these claims on the basis of prior art patents showing headsets utilizing acoustic voice tubes. Two of the references cited were Dreher et al patent 2,904,640 and Olney et al patent 2,485,405.

(D-29) In response to the first action from the Patent Office, the patent attorney amended the claims of the Larkin application to call for a miniature receiver, as well as a miniature microphone and a second acoustic tube extending from the receiver into the wearer's ear. In submitting these amendments to the claims, he stated that

"All of the claims have been amended to define a headset in which the transducers are held adjacent to the wearer's ear, and in which two tubes are used, one from the microphone to the mouth and the other from the receiver to the ear" (under-scoring copied from the amendment), whereas the headsets of the cited references have only a single tube.

(D-30) So far as the file history of the Larkin patent in suit shows, the patent attorney did not advise the Examiner that the use of such an ear tube was old, not only in hearing aids and headsets, but also in the radio-containing sunglasses Plane-Aids had sold. The patent attorney testified that he had never seen the Plane-Aids flyer showing the radio sunglasses, and he had no recollection of having seen an article co-authored by Mr. Larkin in early 1962 which states that "A standard earpiece is used to carry sound from the receiver unit to the ear." In this article, which was presented at the April 1962 meeting of the Aeronautical section of the Society of Automotive Engineers, it was stated that the "outstanding" and "central" feature of the headset is an acoustic voice tube, and that the communication to the ear is by means of a "standard earpiece".

(D-31) So far as the Larkin file history search record shows, without making any further search of the prior art, except the normal interference search required prior to allowance, and without citing any further references, the Examiner allowed the Larkin application and the Larkin patent in suit issued.

(D-32) Shortly after the Larkin patent issued, Mr. Bowman filed suit against Plantronics claiming certain rights under a past development contract with Plantronics, which dated back to mid 1961, and in this suit he claimed to have been the originator of the idea of using an acoustic voice tube in the Plantronics headset.

(D-45) The defendant's R-70 and R-71 headsets have been charged to infringe the Larkin patent in suit, and more particularly claims 1 and 2 thereof. Both of these headsets are behind-the-ear types, which mount directly on the wearer's ear, rather than being detachably attached to an eyeglass frame or headband or other supporting structure on the wearer's head.

(D-47) Plaintiff has stated in answers to interrogatories that claims 1 and 2 of the Larkin patent do not cover its first or second prototypes in which one or both of the transducers were embedded in the temple bar of the glasses, rather than being in a clip-on housing (even though the eyeglasses were, of course, removable from the head). (Plaintiff's Answer to Interrogatories 87 and 88) In this regard, the plaintiff stated that its second prototype "Maico" unit lacked any structural equivalent to the capsule or fitting 10 in the Larkin specification, and, therefore, that it lacked a "support means for detachably supporting the miniature microphone and miniature receiver adjacent the wearer's ear", in the sense of 35 USC 112.

Hutchings Patent No. 3,548,118

(D-58) In early 1962, while Plantronics was still developing the headset of the Larkin patent, it entered into an agreement with Audiotone Company, a hearing aid manufacturer, in which Audiotone agreed to further develop a behind-the-ear or post-auricle headset.

(D-59) Post-auricle hearing aids were well-known in 1962, and Audiotone took one of its current versions, the Audiotone Model 77, and converted it to a headset.

(D-60) This headset was referred to as the Plantronics Model MS-43 and a photograph of it is shown in an exhibit marked EP 4806. It includes a housing which rests behind the wearer's ear and contains a microphone and receiver, together with a voice tube extending under the ear, from the microphone to the wearer's mouth, and an ear tube over the ear.

(D-61) Also in early 1962 Plantronics offered this behind-the-ear headset to the Bell Telephone System under a type designation MS-50A-S.

(D-62) While the MS-43 (or MS-50A-S) never became part of the Plantronics commercial line of headsets, this headset was on sale in 1962 and in public use during that year and at least several years thereafter.

(D-64) After plaintiff marketed its MS-80 or "StarSet", which was also a behind-the-ear headset, where the voice tube extends over the ear as shown in the Hutchings '118 patent in suit, it was sued for patent infringement by the Telex Corporation on the basis of Flygstad et al patent 3,280,273 involving a headset having the voice tube under the ear.

(D-66) In 1968, the Bell Telephone System Operating Companies, plaintiff's principal customer, turned to an earmold type of headset with a voice tube extending from a microphone mounted on the earmold to the wearer's mouth, as in Bryant et al patent 3,440,365 (and similar to the headset of the Dreher et al patent 2,904,640, discussed above).

(D-68) However, in response to the Bell Telephone System's anticipated use of an earmold type headset, designated its Model 61, plaintiff set up its own project to develop a new headset model. This was in November or December of 1968, and one of the versions being considered was a behind-the-ear or post-auricle type.

(D-69) At the outset of the project Mr. Hutchings and others at Plantronics toured the hearing aid outlets in Santa Cruz and purchased one or more behind-the-ear hearing aid cases.

(D-70) Thereafter, Mr. Hutchings started, on December 23, 1968, to layout concepts for a post-auricle type headset, and by December 30 he had a provisional layout completed for a headset having both the microphone tube and receiver tube at the top of the ear.

(D-74) Hutchings' work on the headset with two tubes over the ear was pursued until January 2, 1969. He then evaluated bringing the ear tube under the ear and had a layout completed by January 4, 1969.

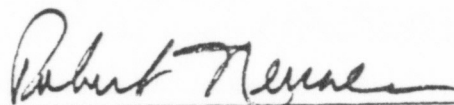
(D-75) An application for a Hutchings design patent was thereafter filed on June 16, 1969, and an application for a utility patent was filed July 3, 1969---these applications later issuing as the Hutchings patents in suit.

Hutchings Design Patent Des. 218,173

(D-89) An application for a design patent covering the Hutchings headset was filed on June 16, 1969, and it issued as the Hutchings design patent 218,173 insuit.

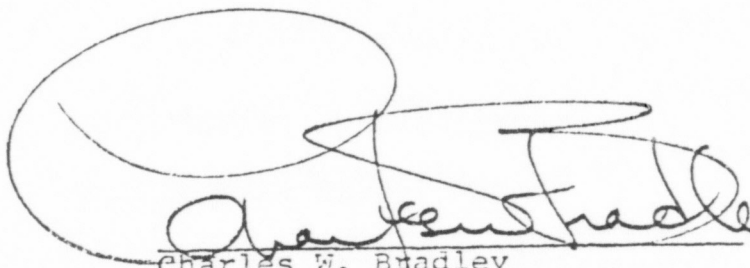
(D-90) During the prosecution of the application for the Hutchings design patent, the Patent Office Examiner cited no prior art references showing post-auricle headsets. Thus, none of the references disclosed the overall configuration of a housing located behind the ear of the wearer in a headset with a voice tube extending forwardly to the mouth and an ear tube extending into the ear.

Respectfully submitted,



Robert Neuner
BRUMBAUGH, GRAVES, DONOHUE
& RAYMOND
30 Rockefeller Plaza
New York, New York 10020
(212) 489-3300

Attorneys for Plaintiff



Charles W. Bradley
Lester W. Clark
COOPER, DUNHAM, CLARK, GRIFFIN
& MORAN
30 Rockefeller Plaza
New York, New York 10020
(212) 977-9550

Attorneys for Defendant

IN THE UNITED STATES DISTRICT COURT
FOR THE SOUTHERN DISTRICT OF NEW YORK

PLANTRONICS, INC.,

Plaintiff,

v.

ROANWELL CORPORATION,

Defendant.

:
:
:
:
:
:
:
:
:
:
:
:

CIVIL ACTION NO.
72 CIV 1625
JUDGE CONNER

PLAINTIFF'S SUMMARIES OF DEPOSITIONS

<u>Contents</u>	<u>Page</u>
G. Victor Rodgers.....	1
George Metcalfe.....	2
Charles D. Burnell.....	4
William E. Bowman III (Counter-Summary).....	6
Merlin W. Leonhardt.....	8
Wallace Keith Larkin.....	10

G. VICTOR RODGERS

Rodgers was an FAA official who prepared the government evaluation of the Plantronics MS-50 headset in 1962 and 1963.

Rodgers' position was Chief of the Systems Modernization Section, Communications Branch, Systems Research and Development Service. He was educated at the University of Maryland, receiving in 1944 a Bachelor of Science Degree in Electrical Engineering. Prior to joining the FAA, he worked in engineering capacities for Bendix Radio and for the U.S. Navy.

Rodgers personally participated in the testing program which resulted in preparation of the FAA evaluation report (Trial Exhibit 22) on the Plantronics MS-50 headset:

"I took a particular interest in this project because it involved development of a device that had been needed for a long time. I personally participated in the operational trials and a large portion of the laboratory tests that resulted in the preparation of the report." (P. 5)

The report accurately reflects the results of the Government development and evaluation study. (P. 5)

The Telex Twinset was a receive-only headset. Headsets with boom microphones for transmitting were available, but, due to their weight, were not ordered for FAA testing. (P. 6)

GEORGE METCALFE

Mr. Metcalfe is a Communications Specialist at NASA's Johnson Space Center, Houston. In 1961, he was a Communications Engineer for RCA, at the Mercury Control Center at Cape Canaveral.

As of 1961, all flight controllers at the Mercury Control Center used the Western Electric Model 52 headset [Trial Exhibit 7.]

"[W]e had a lot of complaints about the WECO 52A headset from our operators' viewpoint, particularly directed toward fatigue." (P. 17)

One of the flight controllers got a Plantronics MS-50 headset from somewhere and asked Metcalfe to modify it to make it work in the Mercury Control Center System. Metcalfe told the controller he "didn't want the headset in our system because it looked like a foreign item." (P. 20)

By the time of the deposition (1974), virtually all NASA ground controllers wore the Plantronics MS-50. Metcalfe's present opinion of it is:

"It's an excellent headset. It--it's lightweight. You can wear it for eight hours without caving in. And it has been a fantastic improvement over the WECO 52 headset." (P. 20)

With regard to his original hesitation about the headset, some amplifier modifications were required to match the impedance to the existing Mercury Control Center System:

"And after that the failure rate fell off. We ran frequency response tests on the headset and found them to be far better than the WECO headset, far better than anything we'd ever seen.

And so eventually I was just worn out about-- as far as resistance was concerned because it was proven to be a good headset." (P. 22)

Initially, there were 50 of the Plantronics headsets that the flight controllers used. "And they insisted on them in spite of the problems we had with them because they were lightweight. And from them on it was nothing but Plantronics." (P. 23) The controllers reached this conclusion "as soon as one of them wore one." (P. 23) As for the WE 52 unit, "you couldn't give them one again." (P. 23)

Given a choice today of changing to some earlier headset, Metcalfe would not switch. "I don't know of a headset of an earlier type that would even equal this Plantronics for comfort." (P. 24)

The serviceability of the Plantronics headset is "excellent." (P. 26)

CHARLES D. BURNELL

Mr. Burnell was Treasurer of Plantronics when it was first incorporated in 1961, and now has no association with the company.

He was a full-time employee and went to work every day there. He had daily contacts with Mr. Larkin, and also contacts with Mr William Bowman whenever he came into the office.

Bowman was hired as an electronics technician, to put together circuitry "that would amplify or make useable the headset that we were trying to build." Keith Larkin is "sort of a super great mechanical genius, and not an electronics type or circuit type." (P. 3)

"Q. Do you recall that at any time during your work for Plantronics that someone proposed a headset having two miniature transducers in a capsule, and an acoustical voice tube and an acoustical receiving tube?

"A. Definitely.

"Q. Who was it who proposed that, if you know of your own personal knowledge?

"A. Keith Larkin." (P. 3)

Keith Larkin remembered that speaking tubes had been used in Army aircraft, to communicate from the front cockpit to the back cockpit. "He decided if it worked on a plane, 4 or 5 feet away, pilot to pilot, why won't it work a

few inches away, and use it as an acoustical tube or tuned air mass or whatever you want to call it." (P. 4)

Relations between Larkin and Bowman were stormy at times. Larkin was adamant about what he wanted Bowman to build.

Burnell was in the employ of Plantronics from May 1961 to May or June of 1963. During that time he never heard Bowman claim to have been the inventor of the MS-50 headset. (P. 5)

At the time of his deposition, Burnell was not an officer, director, employee or consultant for Plantronics. He had no stock ownership or any other interest in the company. (P. 11)

WILLIAM E. BOWMAN III

(Counter-Summary)

After being twice subpoenaed to do so, Mr. Bowman was unable to produce any documentation supporting his claim to inventorship of the MS-50 headset. (P. 46)

Although he had testified in 1965 that it was his life-long habit to prepare notarized documents to preserve conception dates, the only such document he ever produced was dated December 1961, and had nothing to do with the MS-50 (P. 44)

Although Bowman in this deposition insisted he prepared documents in May or June of 1961, he testified in 1965 that the first written document he prepared concerning the Plantronics headset was around October 1961. (P. 45)

With respect to the alleged earlier documents:

"Q. What has happened to those documents, if you know?

"A. Well, as I told you when we were talking before, there are two or three or four documents all contained in a--one of your safety envelopes, you know, your heavy envelopes. And they--I haven't been able to find them. There is one that precedes--there is also a conceptual design that goes back to about 1949, which was essentially an acoustical tube microphone. But it was not used as that at the time.

"Q. That was also a notarized document?

"A. That was a notarized document.

"Q. And you have not found that either?

"A. No. That would be with the other one. I took my notarized documents, all except this one here which I didn't find, and put them all together. If you find one, you will find, I don't know. two or three, if we find one. I brought that along just to show you what we were doing." (P. 48)

MERLIN W. LEONHARDT

Mr. Leonhardt has been a Radio Engineer with United Air Lines since 1953. His duties in 1961 included responsibility to investigate problems with existing aircraft communications systems, evaluate new equipment, canvass the market for new equipment, etc. (P. 6)

United was looking in 1960 for a new headset of reduced weight. The constant clamping on the head with the old HS-33 was very tiring. Additionally, the operation of a hand microphone required the pilot to take one hand away from the steering wheel or controls (P. 11) Furthermore, the HS-33 headset, in its intended position over both ears, prevented intra-cockpit conversations.

United's Flight Operations Group in Denver had investigated for a better headset before Leonhardt began his investigation. They had considered the Western Electric Model 52 [Trial Exhibit 7] and a similar Telex model, and found them both unstable:

"They would not stay on your head under movement. If you moved your head around they would slide off." (P. 14)

Leonhardt commenced his search for a satisfactory headset by sending a request for information to 20-25 vendors of headsets. Of the 19 companies replying, twelve said they could not meet United's requirements; six companies submitted samples

or literature. None of the submissions was satisfactory to meet United's needs. (Pp. 18-32)

Larkin's headset, the Plantronics MS-50, met all of United's needs. United standardized on it. (Pp. 36-37)

Leonhardt doesn't know who at Plantronics proposed the MS-50 configuration. (P. 70)

WALLACE KEITH LARKIN

Larkin is a former Air Force pilot, having attended Air Force Officer Pilot Training School and various other schools related to flying.

After some eleven and a half years in the Air Force, he left as a captain, and in 1952 organized a company involved in weather research. In 1958 he set up a separate company to develop a number of ideas for possible marketing.

Larkin recalls the initial meeting with Trumbull of UAL on April 25, 1961.

Bowman deposition Exhibit 2 [Trial Ex. 3] was made by Courtney Graham and Larkin. It was Larkin's idea, as a result of his meeting with Trumbull.

He probably first met with Bowman in May of 1961, for the purpose of hiring Bowman as a technician. Bowman assembled Bowman's Depo., Exhibit 3, [Trial Ex. 54] at Larkin's direction, from components purchased and supplied by Larkin. [This is the so-called Dahlberg unit.] Bowman put the tube on the boom microphone at Larkin's direction, but reluctantly.

With regard to the Maico unit, Bowman deposition exhibit 4, [Trial Ex. 56], Larkin suggested the change of moving the microphone up to the glasses bow.

Larkin first suggested placing the two transducers in a capsule rather than a glass frame. [Bowman deposition exhibit 5; Trial Ex. 61]. (P. 12)

It was Larkin's idea to use the combination of the two tubes in the headset. (P. 12)

Larkin identifies his signature on the "notarized document" of July 1961. (P. 13)

Page 3 of the "notarized document" of July 7, 1961, states that the miniature microphone is contained in the spectacle bow. This describes the Maico unit [Bowman deposition exhibit 4; Trial Ex. 56]. (P. 16)

Larkin doesn't recall when he first saw a device like the Telex Twinset. (P. 21)

The earpiece of the ARINC specification drawing is not the same as the type used in the Larkin patent. In the Larkin patent, the tube is soft and pliable. The ARINC tube resembles the Twinset tube. (Pp. 38-39)

With respect to the Bowman contract, it was not contemplated that Bowman would make any inventions. The patent drawings were to be made by Bowman, of concepts and structures conceived by Larkin. (Pp. 43 and 108-109)

Bowman was hired as a technician to assemble or build headsets or systems at Larkin's directions. (P. 97)

The acoustic voice tube and the capsule ideas were Larkin's. (Pp. 99-106)

The statements in Larkin's British patent application were true when made. (P. 61)

IN THE UNITED STATES DISTRICT COURT
FOR THE SOUTHERN DISTRICT OF NEW YORK

-----X
PLANTRONICS, INC., :
 :
Plaintiff, :
 :
v. : CIVIL ACTION NO.
 : 72 CIV 1625
ROANWELL CORPORATION, : JUDGE CONNER
 :
Defendant. :
-----X

DEPOSITION SUMMARY OF MERLIN W. LEONHARDT

Radio Engineer, United Airlines, since 1953. (p. 3).
Studied Electrical Engineering for two years at
Purdue University. (pp. 3-4).

Electronics Instructor for the Navy, at University
of Chicago. (p. 4).

Sales Engineer for Casey Bearing Company, 1948-50.
(p. 5).

Joined United Airlines in 1950, as Engineering
Draftsman. (p. 5).

In 1953, obtained engineer rating with UAL and took
over VHF communication responsibilities.

Duties in 1961 included:

- (a) investigating problems with existing aircraft communications systems, any audio system.
- (b) obtaining new equipment.
- (c) recommending new equipment to new aircraft.
- (d) canvassing the market for new equipment and see to installation.
- (e) seeking out and correcting problems with new equipment.
- (f) making recommendations back to equipment manufacturers. (p. 6).

Supervisor was Austin Trumbull. (p. 6).

* * *

Trial Exhibit 17, the HS-33 receive-only headset, was what United was using in 1960. It was very heavy. (p. 8). The companion equipment was any of a number of commercially available hand-held microphones. (p. 9).

In 1960, United was seeking a headset of reduced weight "because this becomes a fatigue factor in the cockpit." (p. 10). "This constant clamping on the head becomes very tiring and restricts motion of the head under certain conditions." (p. 10).

The hand-held microphone "took one hand away from the controls of the airplane to actuate it." (p. 11).

Another problem with the HS-33 headset (Trial Ex. 17) was that it made intra-cockpit conversation difficult. (pp. 12-13).

Before my active investigation in 1960-61 for a better headset, United's Flight Operations Group in Denver was concerned over the problems of heavy weight and manipulation, "and were doing a little investigating on their own before they even mentioned it to engineering." (p. 14).

The Denver Group tried the Western Electric 52 headset (Trial Ex. 7). These headsets

"would not stay on your head under movement. If you moved your head around they would slide off." (p. 14).

A similar Telex headset was found unsatisfactory for the same reason:

"Question: It would fall off your head?
Answer: Right." (p. 15).

As a result of these failures, W. C. Mentzer, Head of United's San Francisco Operations Engineering Group, sent a memo to his Denver Superior, Sommermeyer, on June 30, 1960. (Trial Ex. 6). The memo outlined the problems associated with the HS-33 headset then in use at United, and recited that

"we have heard you express the desire for improved pilot's headphones and microphone equipment, especially in the area of lighter weight and less cumbersome and less entangling devices." (Ex. 6, p. 1).

The June 1960 memo of Mr. Mentzer (Trial Ex. 6) proposed a miniature or hearing-aid approach, and had attached photos showing a typical hearing-aid and a headset mock-up employing hearing-aid components. (Trial Ex. 6, photos).

The Mentzer mock-up was never developed into an operative headset (Agreed Finding 3), and employed no acoustic tubes. It employed a microphone suspended in front of the mouth and a button-type receiver in the ear. (Trial Ex. 6, photo). Mr. Mentzer estimated it would take two or three years to develop it to the usable stage. (Trial Ex. 6).

The June 1960 UAL memo stated that

"The simplicity and light weight of the mock-up is a goal, but probably will not be achievable in actual practice." (Trial Ex. 6, p. 2, emphasis quoted).

On August 17, 1960, Mr. Hodgson of United's Denver Group replied to the Mentzer June memo, and agreed with the delineation of the problem, noted the unsatisfactory WE 52 and Telex headsets, and requested the San Francisco engineering group to "review the market to determine what is available in the headphone/boom mike field." (Trial Ex. 8).

The task fell to United's Messrs. Trumbull, (Superintendent of Electronic Engineering) and me, his subordinate. (Agreed Findings 3.16).

I proceeded to contact each of the headset vendors listed in the EEM Catalog, 22 in number (pp. 16-17), requesting information on available light weight headsets, with transistorized amplifier and dynamic microphones.

19 companies replied: 12 of the 19 said that they could not meet United's requirement; 6 of the remaining 7 including Roanwell, sent brochures or submitted sample units. None proved satisfactory to meet United's needs. (Agreed Findings 3.17).

A unit submitted by Airmed, Limited (Trial Ex. 10) weighed about a pound. We found this to be

"a good boom microphone headset for the state of the art at that time, but still too clumsy, and unacceptable for United's needs." (Agreed Finding 3.18).

A brochure submitted by Amplivox (Trial Ex. 11) showed a headset similar to the Airmed and called "Amplilite". It looked fine, but it was judged unsatisfactory for the same reason as the Airmed -- clumsiness. (Agreed Findings 3.19). A sample was not requested.

Carter Engineering submitted a headset sample. It weighed about the same as the Airmed -- one pound -- and was not pursued for the same reason: clumsiness. (pp. 22-23).

Defendant Roanwell submitted a brochure, but it didn't show any new light weight assemblies. (Agreed Findings 3.21).

Telephonics promised to submit a sample, but never did. (Agreed Findings 3.2).

Telex submitted a prototype formed of its Twinset (Trial Ex. 13) with a boom microphone mounted in front of the mouth. The unit resembled the drawing in Trial Exhibit 14, page 11. (Agreed Findings 3.23). United liked the light-weight of Telex unit (1/4 pound), but it was unstable. The microphone would not stay in place.

"If you placed it there for talking and moved your head around to other cockpit duties, this particular one would walk away or move, it would not stay there, it would reduce your output in transmissions to the ground." (p. 25).

This unsatisfied need led United to Plantronics, and the Plantronics' project leading to the MS-50 headset (Trial Ex. 18) was begun. (pp. 32-34).

The MS-50 met United's needs. (p. 34). United standardized on it for all its aircraft. (p. 37).

It was light weight. (p. 38).

No need for pilot to remove hands from controls.
(p. 38).

It could be worn on either side of the head,
permitting intra-cockpit conversations. (p. 38).

It had very little bulk. (p. 40).

It was comfortable to wear. (p. 40).

* * *

MS-50's components were individually available on
the market prior to the advent of the MS-50. (p. 41).

* * *

Years after the introduction of the MS-50, Electro-
Voice and Amplivox submitted specimens to United similar to
the MS-50. (Trial Ex. 48, 49; pp. 29-31).

* * *

"I couldn't say" whose idea it was at Plantronics
to build the MS-50 configuration. "They were down in Santa
Cruz and I was up here. I don't know". (p. 70).

3

lzrf

UNITED STATES DISTRICT COURT
SOUTHERN DISTRICT OF NEW YORK

-----x
PLANTRONICS, INC., :
Plaintiff, :
-against- : 72 CIV. 1625
ROANWELL CORPORATION, :
Defendant. :

-----x
BEFORE:

HON. WILLIAM C. CONNER

District Judge

New York, New York
March 17, 1975 - 10:00 a.m.

APPEARANCES:

BRUMBAUGH, GRAVES, DONOHUE & RAYMOND, ESQS.,
Attorneys for Plaintiff,
BY: ROBERT NEUNER, ESQ.,
-and-

ARNOLD, WHITE & DURKEE, ESQS.,
BY: PAUL M. JANICKE, ESQ.,
TOM ARNOLD, ESQ.,
Of Counsel.

COOPER, DUNHAM, CLARK, GRIFFIN & MORAN, ESQS.,
Attorneys for Defendant,
BY: LESTER W. CLARK, ESQ.,
CHARLES W. BRADLEY, ESQ.,
Of Counsel.

(Case called.)

MR. NEUNER: Your Honor, may it please the Court, my name is Robert Neuner of Brumbaugh, Graves, Donohue & Raymond, associate counsel for the plaintiff in this action and I would like to introduce for your Honor plaintiff's trial counsel and two other individuals sitting here at the lawyers' table; Mr. Tom Arnold, Mr. Paul Janicke, Mr. Steven Spragens who is a vice-president for the Plantronics Corporation and Mrs. Annabelle Clinton, who is a law student and working as a paralegal in the firm of Arnold, White & Durkee and if your Honor please I would respectfully move the admission on a pro haec vice basis of Messrs. Arnold and Janicke.

I can speak for their competence and ability.

THE COURT: That is superfluous, I am familiar, to put it mildly with their competence.

MR. NEUNER: I would move their admission.

THE COURT: So granted.

MR. NEUNER: I would request permission to withdraw myself, and leaving the trial of this case in very able hands.

THE COURT: All right.

MR. NEUNER: Thank you very much.

THE COURT: I understand you want to make an

1 lzrf

3

2 opening statement, Mr. Arnold?

3 MR. ARNOLD: If I may, your Honor.

4 May it please the Court, the Constitution has in
5 it a finding of fact and that finding of fact to which I
6 refer is that the securing to inventors for a limited time
7 the exclusive rights in their invention will promote the
8 progress of the useful arts. The public interest service
9 which is rendered by the patent is effective because the
10 pursuit of that exclusive right and most particularly I
11 point out in application to this case the pursuit of
12 the leap frog over the competitor's perfected exclusive right
13 induces workers to commit their sweat and capitalists to
14 submit their capital to the development and marketing of
15 new items for the benefit and enjoyment of the public.

16 THE COURT: You don't have to sell the patent
17 system to me.

18 MR. ARNOLD: This case, your Honor, is a classic
19 example of this constitutional purpose in action. In 1960
20 Wallace K. Larkin, the patentee of the first patent in suit,
21 a business adventurer by personality type was trying to de-
22 sign a better golf cart, and to make a little money for this
23 golf cart venture of his, he formed a partnership to import
24 and sell a Japanese hearing aid -- excuse me, a Japanese
25 sunglasses radio type device that had a radio in the

1 lzrf

4

2 temple member of the eyeglasses quite like my hearing aid
3 is in the temple member of my eyeglasses.

4 You may recall that transistors were invented in
5 1948 and that about 1952 the transistors of hearing aid
6 quality were stock items on the market available in the market.
7 I believe it was 1953 before the quality items for
8 hearing aid purposes were generally available on the market.

9 In all events the Japanese transistor radios
10 flooded our market. The Larkin partnership was called
11 Plane-Aids. Mr. Larkin employed an airline pilot, one
12 Courtney Graham to help him peddle his sunglasses. Meanwhile
13 telephone operators all over the country were using the
14 headset known as the 52. This is the Bell system
15 Model 52 headset also manufactured by defendant Roanwell.
16 And airline pilots all over the country were using the unit
17 HS-33 and it required a hand held microphone in order
18 to operate for the airline pilot to transmit.

19 A radio operator perhaps sometimes used an
20 Airmed or the Carter unit, I believe this is the Airmed
21 unit and the Carter unit. Telex offered a smaller unit.
22 We have tried everywhere to find one of the Telex units
23 with a microphone on it. We have been unable to find one
24 although it was advertised in one flyer. It apparently
25 never did sell enough that even a very diligent search

1 lzrf

5

2 through Telex offices and elsewhere would reveal a single
3 specimen of that unit and Roanwell, the defendant which
4 had gone into the headset business in 1948 in its
5 communications division, it was manufacturing a complete line
6 of headsets for the military market, for the telephone
7 market, for the air traffic controllers, the hi-fi home
8 market, auditoriums and whatever.
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25

2 The transmit receiver had headsets that weighed
3 in the neighborhood of a pound excepting the Bell 52, which
4 weighed about nine ounces, so that that was the weight order
5 of magnitude that existed in the industry in 1960 when
6 we pick up our story.

7 The units that were selling in 1960 were basic-
8 ally World War II vintage instruments with minor improvement
9 of one detail or another and if your Honor was ever an
10 aviator or a radio operator during the war, you will know
11 some of the disadvantages. You develop a headache from
12 the pressure. The springs had to be strong. You develop
13 sensitive points on the ear so the pilot moves the headset
14 a bit and when he moves it, he doesn't hear as well and pret
15 soon the repetition rate is going up, he says what did you
16 say, what did you say?

17 So there are various problems that existed that
18 we will go into in the evidence. Hearing aid transducers
19 of good quality, I believe I have already indicated were
20 available many years prior to 1960. United Airlines in
21 1960 was finding the shortcomings of the available headsets
22 to be totally unacceptable and United's Mr. Mentzer, who is
23 the vice-president of engineering, he wore a hearing aid
24 very much like mine with the acoustic tube going into his
25 ear, but he suggested out of that background perhaps his

1 zb-2
2 solution to the problem which was to hang a microphone
3 on a lanyard from eyeglasses while having a hearing aid in
4 the ear. He saw a large market if United were able to
5 develop its own set, but United's need was acute, and he
6 also saw a two, three-year development time so they com-
7 missioned two engineers, Leonhardt and Trumbull, to canvass
8 the market. United solicited proposals from all over the
9 world. They got answers from all over the world. Nineteen
10 companies from several different countries gave them some
11 sort of response to their soliciation. All United asked for
12 was a lightweight transistoized headset with a dynamic
13 microphone, but no one could satisfy their requirements.

14 As luck would have it one of the Plane-Aids
15 flyers that advertised the eyeglasses that -- the radio eye-
16 glasses came to the attention of United and so United called
17 Plane-Aids and Mr. Larkin went to United and talked to them.

18 I suspect he never did tell United that Plane-
19 Aids had no manufacturing facility and no research and
20 development facility . The nature of the gentleman is such
21 I wonder if he volunteered that, but the point was he was
22 a chronic eternal optimist and he said he would give it
23 a try and he and his airline pilot friend, who was still
24 piloting, and a parttime hired hand named Bowman, they worked
25 nights and weekends and they made a mock-up for United, and

1 zb-3

2 after various this and that, it evolved into the unit that
3 has become the MS-50.

4 Here we have the MS-50. It can be mounted on
5 glasses by clipping over the glasses side or mounted on
6 a head band by sliding onto the unit.

7 The application for patent was filed in 1961.
8 Plantronics at that time had a total number of employees
9 of about four, five people.

10 United adopted the MS-50 as standard on its air-
11 lines and other airlines followed. Contemporaneously with
12 Larkin's work and beginning in early 1961, defendant
13 Roanwell was working on a new lightweight headset development
14 for a high noise environment. The Roanwell effort matured
15 I believe, about 1962.

16 I don't have the exact date that it matured into
17 the offered product into what Roanwell ballyhooed as, and
18 I quote "Roanwell's new line of lightweight headsets feature
19 maximum comfort. As light as eight ounces, no fatiguing
20 weight, no annoying pressure, blah, blah design unit."

21 The lightweight headset that they were talking
22 about, they features in an ad that had a picture of people
23 wearing them. "The headset you are wearing weighs only
24 eight ounces? Blah, blah, it gives me more comfort than
25 any before. I can wear it longer with less fatigue. It

is adjustable.

That was Roanwell's lightweight effort by comparison with the Larkin lightweight effort. Contemporaneous time.

When in that same year of 1962, Roanwell saw the MS-50, Roanwell purchased one and examined it at its own labs. Said Roanwell's president Howell, at that time Mr. Howell was president, on December 14, "Even though the overall conception of the Plantronics' headset was finalized by an upstart in the headset industry it would be foolish for us not to admit that the headset created a great deal of interest among headset users."

The vice-president, now president, Mr. Powers, writing December 7th, said, we both feel that this Plantronics MS-50 may be the basis of a new generation of headsets. We are therefore interested in determining what kind of a deal could be made with Plantronics for the purchase of this headset as a going business.

And finally, Mr. Howell, then president also wrote, "We are going to be forced to get into the picture sooner or later in one way or another."

End 1B

2 While this was going on in the west with United
3 Airlines and Plantronics ' development and Roanwell's
4 development of its Lightweight in the east, air traffic
5 controllers and the Federal Aviation Administration was
6 experiencing the same problems, expending the same effort,
7 suffering the same frustrations as United, and I quote the
8 FAA report.

9 "For many years the agency sought an improved
10 headset which could be worn by air traffic controllers for
11 long periods of time without discomfort and yet provide
12 adequate transmission and reception capabilities. The
13 headsets normally used have been described by controllers
14 as bulky, uncomfortable and cumbersome. They have been
15 known to produce headaches and sore ears on continuous wear,
16 and have caused interference with normal activities."

17 The FAA canvassed the market just as they did at
18 United. They made requests of established headset suppliers
19 and like United they came up dry.

20 Then the Plantronics MS-50 appeared at FAA and,
21 in the words of the FAA, after they had conducted their tests
22 the Plantronics headset "appears so ideally suited for air
23 traffic control use that the previously planned in-house
24 development effort was discontinued."

25 FAA was one of Western Electric's big, big

1 gwb-2

2 customers for the Model 52 headset. so Bell Labs attempted
3 to satisfy the FAA with a new design of its own, the Model
4 Y-1. But the FAA did a comparative study of the Larkin MS-50,
5 the Bell Western Electric Model-52, that had been the
6 standard for telephone operators for years, and the
7 Bell Y-1.

8 As a result of that FAA comparative study, the
9 Y-1 project was abandoned, the FAA terminated its in-house
10 development and the FAA standardized on the MS-50. The
11 FAA forced Western Electric to provide the MS-50 to it.

12 The story is slightly different, but it ends up
13 with the same result, standardization on the MS-50. Western
14 Electric had never before approved any headset to be
15 connected to its lines other than headsets designed by itself.
16 But Western Electric very reluctantly gave the MS-50 its KS
17 number of approval.

18 In the course of all this, Plane-Aids became
19 Plantronics, Inc., \$300,000 was raised at the commencement
20 of the Larkin development and essentially all of it was gone,
21 all but about 5000 when the first production order came in.
22 The company has since sold 700,000 headsets of the MS-50
23 type at a total value in excess of \$35 million and an addi-
24 tional 600,000 StarSets, which we will discuss in just a
25 moment, have also been sold for a value in excess of \$30

1 million. Ninety-nine percent of the total sales of the
2 plaintiff up to the time of the commencement of this suit
3 were of units under the Larkin patent. About 1972 a deci-
4 sion was made to phase out the MS-50 and the trade was advised
5 that in view of the new Starsets which we will talk about in
6 half a minute, the MS-50 will be phased out and sales dropped
7

8 But the MS-50 seems to be a product that wouldn't
9 die because in spite of the announcement to the trade it was
10 being phased out, in the last complete fiscal year sales
11 went up 3000 units to 53,000 units.

12 So much for the Larkin patent.

13 Bell Labs, seeing an immediate loss of much of
14 its market for the Model 52, set about to design a leap frog
15 over the Larkin position. This of course is good patent
16 system function, the protective position of a competitor
17 goading Bell Labs to try to redesign something else for
18 itself that would outdo the MS-50.

19 The goal of Bell's new work was a bandless head-
20 set, one that was light, comfortable, stable but that needs
21 no headband, no eyeglass frame to support it. Bell Labs
22 designed the Model 61. The Model 61 was patented in the
23 Bryant patent. The Bell Labs Model 61 was ready for contracts
24 in late 1968 for the manufacture of the Model 61.

End 2A 25

1 2b am gwr f 1

2 Worried that Bell Labs Model 61, supported by
3 Bell's extreme marketing might in its own organization as
4 well as elsewhere, its capacity to sell iceboxes to
5 Eskimos, both plaintiff and defendant competed for the
6 privilege of manufacturing the Western Electric Model 61.

7 Roanwell got the contract for the Bell design.
8 In the panic of anticipating loss of market, Plantronics
9 wrote Roanwell a letter charging that its manufacture of
10 the Bell Labs Model 61 would infringe the Larkin patent.
11 It was a bad mistake. Roanwell's counsel, Mr. Clark, quite
12 properly pointed out that the Bell Labs Model 61 was so
13 designed to avoid the Larkin patent, and from that day
14 to this Plantronics has accepted that correction that
15 the Larkin patent is not infringed by the Model 61 designed
16 by Bell Lab.

17 But Plantronics was still fearful of loss of its
18 market to the Bell Labs Model 61. Plantronics properly
19 organized a task force, the objective: A better
20 handless headset than Bell's Model 61.

21 Again, good patent system function in action.
22 The proposal by Plantronics, a bonus to all hands if you
23 can do it and if you are going to beat Bell out of its
24 own market, it had better not be just a little better,
25 the headset had better be a lot better than Bell's Model 61.

1 gwrf 2

2 Developing a patentable leap frog over the
3 Bell Model 61 was an express part of the target. So the
4 task force set to work. The task force is Mr. Hutchings,
5 who is here with us in the jury box. He suggested a post-
6 auricle set hung on the ear, like hearing aids that had
7 become popular by then or perhaps for a decade.

8 Mr. Graham, by then president of Plantronics,
9 said, no, we tried that back in 1962 with the MS-43 and
10 it failed. So that's no good. When Flygstad of Telex
11 had patented a behind-the-ear headset it too never succeeded
12 in the marketplace.

13 Mr. Hutchings, however, had no experience in
14 headsets. He didn't know enough about what had been tried
15 and failed and what didn't work and he persisted.

16 He said it could so too be done, and thus was
17 born the StarSet that in its early days was known as the
18 MS-50-80. Two words for the same description and the
19 Starset has an amplifier in the plug, but the headset
20 itself is shown here and it hooks over the ear. Thus
21 was born the StarSet.

22 In February of '69, what then was called the MS-50-
23 was shown to AT&T and it was enthusiastically complimented
24 by AT&T, but Bell reported, to Plantronics' great worry,
25 over the proliferation of many different headsets. Needless

1 qwrf 3

2 to say Plantronics was feeling that Bell's concern
3 was not over proliferation but Bell's concern was loss
4 of market of its Model 61 which it had just introduced into
5 the market. This is the Model 61 sales on the exhibit.

6 So whether that was right or not, that's obviously
7 what Plantronics thought. Early in 1970, Roanwell sales
8 representatives concluded that an independent FAA Evaluation
9 showed the MS-50-80 or StarSet -- well, I skipped a point
10 that Bell Labs did give the StarSet their KS approval.
11 Then we skip to Roanwell in early 1970.

12 Their sales representatives concluded that an
13 independent FAA Evaluation showed the MS-50-80 or the
14 StarSet to be, and I quote, "The most valuable and acceptable
15 instrument used to date."

16 Based upon that evaluation, the FAA wrote to
17 AT&T requesting that the new StarSet be made available for
18 FAA installation.

19 Then in August, 1970, the Western Electric conven-
20 tion granted the StarSet -- excuse me -- Western Electronics
21 convention, this is Western United States -- granted
22 the StarSet its industrial design award for creative
23 industrial design solutions. This StarSet, as I have
24 indicated, has already sold more than 60,000 units, more
25 than 30 million dollars.

1 gwrf 4

2 Here we have the StarSet sales rising on the same
3 chart, 1970, first quarter 1970, starting out concurrently
4 with the Bell Model 61 and as the StarSet sales rose
5 and the Bell model rose when they were both introduced,
6 Bell's marketing might apparently showed its muscle for
7 a short while and Bell got ahead but the Bell Model 61
8 tapered off and was abandoned in 1973 while the StarSet
9 sales continue. to go straight up into the sky.

10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25

1 1zrf 3a am 1

2 So that we see the market impact of the two com-
3 petitively designed efforts designed side by side over
4 on the market side by side, one of them failed, the other
5 one succeeded.

6 What was Roanwell doing at this time? A new
7 MS-50-80 was announced to Plantronics stockholders in
8 the July 1969 announcement to stockholders of an upcoming
9 thing. Roanwell initiated a major surveillance
10 of Plantronics aimed at advance information on the upcoming
11 MS-50-80 later named the StarSet and it got hold of this
12 brochure and this brochure, of course, has a picture of the
13 StarSet on it.

14 Roanwell got hold of this brochure and then Roanwell
15 made what we believed to be a wooden mockup, we have been
16 unable to find it but some kind of a mockup that was an
17 exact copy of the Plantronics StarSet and though they didn't
18 have anything on the market at all, they put out an adver-
19 tising flyer Model R70-A, lightweight headset, and it
20 was sufficiently close in looks in the picture that the
21 inventor of the StarSet thought they had somehow or another
22 stolen a real bona fide unit out of the plant because they
23 knew there was no other way to get one. It was that
24 close copy they put out in their advertising.

25 This, while frantically employing outside help,

2 Unex Labs, to help them design a new unit and help them
3 get it on the market of the behind-the-ear set. Roanwell
4 made layouts, Unex Lab made design efforts, most of them
5 looking nothing like the StarSet. But as the product evolved,
6 it became the Model R70, the first prototype unit obtained
7 from Unex in 1969 and committed to Bell Labs for evaluation
8 did not have a hook.

9 Here we have the StarSet in the one hand and the
10 Roanwell actual copy as it came on the market on the other.
11 As I say, as the design developed, the R70 commenced to look
12 more and more like this one. It started out looking
13 different, round, different, all kinds of funny things
14 but as it evolved it took this form and they submitted
15 then a unit to Bell Labs for approval that did not have
16 this hook. They submitted, I don't know what kind of a
17 ferrule in mounting here it had but in all events as
18 soon as they got hold of a specimen of the StarSet they took
19 measurements down to the last thousandths of an inch, they
20 saw this hook, tried it out and adopted this little extra
21 hook on the top of the ear, obsoleted their prior design
22 and copied the mounting means there as well as the
23 general overall design as you can see.

24 On July 28, 1970 the design patent on Mr. Hutchings
25 invention an ornamental design was issued and on December

15, 1970 the utility patent issued. The story that I have told is a real world story, a story of the patent system in action.

Defendant takes the position, however, that the patents on the StarSet and MS50 are like various prior art that they have dug up out of the dusty libraries and scrap heaps of abandoned ideas.

Both the StarSet and the MS50 on the one hand and prior art they have found on the other used transducers and acoustic tubes and all of the different elements that existed in the prior art and they therefore argue that these patents are invalid over this prior art.

This is very much like saying that a man and a woman are the same because they each have a head, two legs, two arms, two feet and two hands. But it is the difference that is important, viva la difference. If defendant's hindsight theory of what should have been obvious to men of skill in the art should be permitted in this case to prevail over the real world proof of what was obvious to people skilled in the art then the patent law itself is a fraud upon inventors who invest their sweat and upon the capitalists who invest their money.

As the Supreme Court has said it, the defendant gives the praise of their words to the prior art. They

1 give the tribute of their actions to the patented inventions
2 of Plantronics.
3

4 One other little remark I will make in concluding
5 We have sued on certain claims. The counterclaims have
6 brought other claims into the patent but we are prepared
7 to stand or fall on claim one of each patent and in order
8 that we may edit the trial proceedings, we will address
9 ourselves only to claim one of each patent and will
10 stipulate that all other claims should stand or fall with
11 claim one of each patent. It will shorten our trial
12 proceedings without any change in the merit of the case.

13 MR. BRADLEY: If your Honor please, we can agree
14 that the Constitution provides protection for inventions
15 and the purpose of this is to advance the art, the technical
16 art. We also feel that legislation adopted pursuant to the
17 Constitution placed constraints on noninventions impeding
18 the development in the art and the latter is what we have
19 in this case.

20 As your Honor knows, there are three patents in
21 suit, one is a Larkin patent and the other two are Hutchings
22 patents. The Hutchings patents are one utility patent
23 and one design patent. It is the Defendant's position
24 that all three of the patents are invalid over the prior
25 art, that Larkin in fact did not even invent what he

1 filed on in his application and what he got his patent on.
2 We also say that they in all three patents, they failed
3 to call to the Patent Office's attention known prior art
4 which they -- and they relied upon features in the known
5 prior art to get their allowance of the claims before
6 the Patent Office.
7

8 In one case there was even an article by
9 Mr. Larkin saying that the ear tube in his headset is a
10 conventional item but when the Patent Office found Headsets
11 with voice tubes that Larkin initially thought was his
12 invention, they put in the ear tube and said none
13 of the references had two tubes. But they didn't tell the
14 Patent Office that the tube into the ear was conventional
15 and that they knew about it and that it was known and the
16 examiner made no further search, he allowed the patent.

17 In the case of the Hutchings patent, they
18 developed a behind-the-ear headset from a behind-the-ear
19 hearing aid and they argued before the Patent Office
20 that putting the voice on the top gives the headset
21 some kind of balance so that it is more stable because
22 the Patent Office cited a reference with the voice tube at
23 the bottom but they didn't tell the Patent Office that
24 they had a hearing aid that they went out and copied from
25 that had the voice tube at the top and the Patent Office

found nothing like that.

THE COURT: That's a hearing aid with a voice tube

MR. BRADLEY: The hearing aids had a microphone tube at the top. Both of these are microphone tubes.

In the case of the headset, it would be of course just picking up the wearer's voice. In the case of the hearing aid it would be picking up whatever is coming in, whether it is somebody's voice or not so I should say a microphone tube.

THE COURT: You don't mean a tube? Was there any tube in the hearing aid?

MR. BRADLEY: They were made two different ways, your Honor. The ones with the microphone we can say port at the top and the ones with the microphone tube at the top.

THE COURT: What was the tube used for?

MR. BRADLEY: The two kinds. The one with the port at the top was called a front facing microphone. The one with the tube would be brought down to be in front of the ear so that at least theoretically it would take advantage of the outer ear in focusing the sound at the pickup point of the tube.

Both of these were known in the literature. The one most prevalent in the field at the time was the front-

1 facing microphone with the port at the top, but in both
2 cases the Patent Office wasn't given the advantage of
3 knowing these things to be able to make the judgment.
4

5 It is also our position that the devices accused
6 here do not infringe the Larkin patent because we
7 say in the context of that patent, the claim is talking about
8 detachably attaching a headset to a support such as eyeglasses
9 or headband and not just hanging it on the ear. We agree
10 as to the Hutchings utility patent that if valid, we
11 infringe the first four claims and counsel is going to talk
12 mainly about the first claims and we would agree if valid we
13 infringe that claim.

14 We do not agree that we infringe the design of
15 the Hutchings design patent. It is also our position that
16 the Hutchings utility patent, being for the configuration
17 with the tubes in the configuration is really for
18 the same invention as the design, so that we have a double
19 patenting situation which would affect the second of these
20 patents that have been issued, which would be the utility
21 patent.

22 And further we say that the design is based upon
23 purely functional considerations. We did have an
24 issue relating to foreign patents and licensing practices
25 based on those and it is our understanding that your Honor

2 has granted the motion to delete those from the suit
3 and so I won't comment on those.

4 Counsel has commented on the large market that
5 brought out the Larkin proposal but no one else. In
6 depositions taken of Mr. Trumbull from United Airlines
7 who was on the board of directors of plaintiff from, I
8 believe it was August '61 until November '63, he stated, and
9 I quote, "I think most of them were not interested not
10 because they were dumb but because they didn't see any market.
11 If they sold five for every airplane in the world, they
12 still wouldn't have a market or enough to bother with compared
13 with the consumer market.

14 "You know the airplane industry isn't very
15 big. You sell 500 of something, that saturates the market
16 pretty near."

17 Your Honor, when I was mentioning tubes in
18 connection with these headsets, I was, of course, referring
19 to the acoustical tube that picks up the sound and of
20 course I know the term tube is also used for electronic
21 tubes.

22 We weren't referring to that type of tube.

23 THE COURT: I understand. I just didn't realize
24 that in a hearing aid you needed a microphone tube. I
25 am quite familiar with the difference between an

2 electronic tube and one of these sound tubes.

3 MR. BRADLEY: Counsel commented on Roanwell's
4 efforts to produce a lightweight headset which weighed about
5 eight ounces. This is really mixing apples and oranges.
6 About the same time period Plantronics developed what they
7 call an ultra lightweight headset but this was not
8 a little tube in the ear, it was directed toward the same
9 type of thing that Roanwell was developing, it was ear cushion
10 around the ear, which is a totally different type of headset.

11 This one which they call the ultra lightweight
12 headset, which also used their acoustic tube, weighed,
13 according to the brochure, from six to eight ounces.

14 There are two other points I would like to make,
15 your Honor, raised by counsel. One is that at the time
16 the AT&T system was going to a headset called the 61,
17 which was the ear mold type headset and it had an
18 ear mold in the ear that held the transducers and a voice
19 tube down to the mouth, plaintiff took the position that
20 it infringed Larkin's patent, not only legally it infringes
21 but they had two or three writeups by their technical people
22 saying there is an acoustic tube through the ear mold to
23 the ear, which we agree with completely.

24 Plantronics changed their position on that and we
25 only heard it in this suit because one of the references

1 cited by the examiner was an ear mold supported headset
2 and the attorney for Plantronics had told the Patent Office
3 that only has one tube. In fact, it had two tubes and
4 it has two acoustic tubes and Plantronics took that position
5 themselves when it came to Bell Laboratories developing
6 something like that, that it was an infringement of their
7 patent and it had the two tubes.
8

9 When we took their deposition in this suit, they
10 told us we straightened them out, they realized it doesn't
11 have two tubes. They never wrote and told us.

12 In fact it has two tubes.

13 The second point is, and the last point I want to
14 make, is that when we compare ups and downs of curves, we
15 are really talking about behind-the-ear supported headsets
16 as distinguished from in the ear headsets.
17
18
19
20
21
22
23
24
25

1 The ones in the ear were fine headsets, but
2 they had problems of the cost of the ear mold and the
3 logistics of making an ear mold custom for each ear. This
4 was a problem of employees that would come and stay for a
5 month, it was a problem in outlying areas and so that Bell
6 Laboratories or the Bell System predicted great things
7 for this ear mold supported headset, but in practice they
8 found it had these limitations, not really scientific limi-
9 tations, but limitations which are meaningful in the market
10 place.
11

12 Plantronics came onto the market with a behind
13 the ear headset with a little tube that plugs into the ear,
14 it didn't have these problems and that is what took off
15 as compared to the 61-A. But it is a comparison of behind
16 the ear headsets versus in the ear, not whether the voice
17 tube is at the top or at the bottom.

18 Your Honor, it is our position that all of the
19 patents in suit are invalid and that the other defenses
20 I have mentioned are sound defenses and the case should be
21 ruled in favor of the defendant.

22 THE COURT: All right, Mr. Arnold, you may call
23 your first witness.

24 MR. ARNOLD: Mr. Martin.,
25

DANIEL WILLIAM MARTIN, called as
a witness by the plaintiff, having been first duly
sworn, was examined and testified as follows:

DIRECT EXAMINATION

BY MR. JANICKE:

Q Dr. Martin, you are appearing here today as an
expert on behalf of Roanwell, the defendant?

A Yes, I am.

Q You have some familiarity with headsets in the
period prior to 1961?

A I have worked on headsets since 1941.

THE COURT: Mr. Janicke, do you have a physical
disability?

MR. JANICKE: No, Judge.

THE COURT: I prefer you stand.

Q At any time prior to 1961, were you aware of the
physical and acoustic characteristics of a combination of
a microphone and a tube?

A Yes.

Q In particular at that time, were you aware of
the frequency response characteristics of such a combination?

A Yes.

Q What were the factors or parameters that
determined the frequency response characteristics of a micro

1 zb-3
2 phone and tube?

3 A First of all, it would depend upon the inherent
4 frequency response of the microphone unit without a tube.
5 Superimposed upon this would be the effects of the tube
6 consisting of a series of resonance frequencies. In addi-
7 tion to that, the acoustical damping that can be associated
8 with either the microphone unit or the tube or the combina-
9 tion thereof.

10 These resonances determine the magnitude of the
11 resonance peaks and in the case of a large amount of acoust-
12 ical resistance, these resonance peaks are damped out.

13 You said frequency response, I believe.

14 Q Yes. And again I am speaking to what was known
15 prior to 1961, if there is a difference.

16 A I think the principle for this have been essent-
17 ially the same for many years.

18 Q Does the cross-section area of the tube have
19 any effect on the overall response?

20 A When the tubing becomes very small in cross-
21 section, there is more acoustical damping within the tube.
22 However, in the range of diameters that are usually used,
23 there is considerable resonance at the resonance frequencies
24 unless damping is provided specially.

25 Q Does the length of the tube have an effect on

1 zb-4

Martin-direct

2 frequency response?

3 A The peaks in the resonance curve for the tube
4 can be predicted with considerable certainty as far as
5 their frequency is concerned by the length of the tubing.

6 Q Are there any other factors that you haven't
7 mentioned that control the combinations' frequency response?

8 A If there are any attachments to the tubing
9 or leakage between the tubing and the microphone, these
10 could affect the frequency response.

11 Q Anything else you can now recall?

12 A Not at the moment.

13 MR. JANICKE: I have no further questions at this
14 time. I presume Roanwell will be calling Dr. Martin in
15 their case in chief.

16 MR. BRADLEY: We intend to call Dr. Martin. We
17 have no questions at this time.

18 THE COURT: All right, thank you, Mr. Martin.

19 (Witness excused.)

20 MR. JANICKE: Your Honor, I am informed that
21 Exhibits 1 to 131 of our trial exhibits, which are in the
22 green folders, are agreed by defendant to be admissible and
23 I think we can save some time if we can admit them all at
24 once.

25 THE COURT: All right, they are admitted.

zb-5

xxx

(Plaintiff's Exhibits 1 through 131,
inclusive, were received in evidence.)

MR. JANICKE: Prior to calling our first witness,
and in order to set the hardware stage for his testimony,
I would like to read portions of the summary of Mr.
Leonhardt's deposition. Mr. Leonhardt was an engineer with
United Airlines who gave his deposition in this case.

THE COURT: How long is the summary you are going
to read from?

MR. JANICKE: The total summary is seven pages,
of which I would like to read half.

THE COURT: Do I have a copy of it?

MR. JANICKE: Yes, your Honor, we submitted our
summaries last Wednesday as required.

THE COURT: I have it here.

MR. BRADLEY: Your Honor, I would like to observe,
I am a bit late, in connection with the proposal on the
exhibits that one of them contained some admissions as to
infringement which we subsequently withdrew and I think those
admissions we made initially are still admissible in evidence,
so we do not object to them being admitted, but we merely
observe to the Court they have been withdrawn.

THE COURT: All right.

MR. JANICKE: Do you have the seven or eight page

Leonhardt summary, your Honor. The first is only two.

THE COURT: I have it here. Let me say in the future, if you will tell me anything you plan to read, I will read it in advance so you don't have to take the time of everybody to read it.

MR. JANICKE: We plan to read the summaries of each of these depositions as we have proposed them.

THE COURT: I will read them all tonight so you won't have to read any more of them. I haven't read this one yet and I will permit you to read it now on your representation that it is necessary to an understanding of the testimony of the following witness.

MR. JANICKE: Yes, your Honor. I will omit his qualifications and engineering background and go immediately to the hardware.

Trial Exhibit 17, the HS33 headset, is what United Airlines was using in their aircraft in 1960. This was a heavy one-pound unit and the companion equipment was any of a number of commercially available hand-held microphones.

In 1960 United was seeking a headset of reduced weight because this becomes a fatigue factor in the cockpit. Constant clamping on the head becomes very tiring and restricts motion of the head under certain conditions, and moreover the hand held microphone took one hand away from the

controls of the airplane in order to actuate the microphone.

Another problem with the HS33 was that it made intra-cockpit conversations difficult. Before Mr. Leonhardt's active investigation for a better headset in the period 1960 to '61, United's flight operations group in Denver was concerned over the problems of heavy weight and manipulation and were doing some investigation of their own before the Leonhardt investigation. The Denver group tried the Western Electric 52, which is Trial Exhibit 7, and a similar Telex unit. They found each of them to be unstable. They would not stay on your head under movement. If you move your head around, they would slide off, was the testimony of Mr. Leonhardt.

As a result of these failures, Mr. Mentzer, head of the United San Francisco engineering group, sent a memo in June of 1960 and it outlined the problems associated with the HS33 headset as I have just stated. Mr. Mentzer suggested a possible mock-up adopted from a hearing aid and that is Trial Exhibit 6.

That was never built into a complete unit. It employed a microphone suspended in front of the mouth and a button-type hearing aid receiver in the ear as shown in Trial Exhibit 6, and the photographs with it.

The memo stated in 1960 that the simplicity

1 zb-8

2 and lightweight of the mockup is a goal, but probably
3 will not be achievable in actual practice.

4 August 17 of 1960 , Mr. Hodgson of the Denver
5 group replied to the Mentzer memo and suggests and agreed
6 with the delineation of the problem. Noted the unsatisfac-
7 tory WE52 headset, the boom microphone, and requested San
8 Francisco engineering group to review the market to determine
9 what was available in the headset boom mike field.

10 Mr. Trumbull and Mr. Leonhardt undertook that
11 job. They contacted headset vendors, 22 in number, all
12 over the world and requested information on available light
13 weight headsets with transistorized amplifier and dynamic
14 microphones. Nineteen companies replied, twelve of them
15 saying they couldn't meet United's requirements. Six of
16 the remaining seven, including Roanwell, sent brochures or
17 submitted sample units and none of these proved satisfactory
18 to meet United's needs.

19 The first unit evaluated by United was the
20 Airmed unit, Trial Exhibit 10. United found this to be
21 a good boom microphone headset for the state of the art at
22 that time, but still too clumsy and unacceptable for United's
23 needs. A brochure submitted by Amplivox showed a headset
24 similar to the Airmed and called Amplilite. It looked
25 fine, but was judged unsatisfactory for the same reason as

1 zb-9

2 the Airmed, clumsiness.

3 Carter Engineering submitted a sample. It weighed
4 about the same as the Airmed, one pound, and was not
5 pursued for the same reason, clumsiness.

6 Defendant Roanwell submitted a brochure but
7 it didn't show any new lightweight assemblies. Telephonics
8 promised to submit a sample, but never did. Telex submitted
9 a prototype formed of its Twin Set, which is Trial Exhibit 13,
10 with a boom microphone down in front of the mouth, however.

11 This Exhibit 13 is just the twin set without the
12 boom, United liked the light weight of the Telex unit
13 but it was unstable. The microphone would not stay in
14 place. If you placed it there for talking and moved your
15 head around to other cockpit duties, this particular one would
16 walk away or move, but wouldn't stay there. It would reduce
17 your output in transmissions to the ground.

18 This unsatisfied need led United to Plantronics
19 and the Plantronics project leading to the MS50 headset
20 and Trial Exhibit 18 was commenced. The MS50 met United's
21 needs. United standardized on it for all its aircraft.
22 It was light weight, no need for the pilot to remove his
23 hands from the microphone. Could be worn on either side
24 of the head, thereby permitting conversations in the cockpit,
25 had very little bulk and was comfortable to wear.

1 zb-10

2 The components for this headset were individually
3 available on the market prior to the advent of the headset.
4 Years after the introduction of the MS50, Electrovoice
5 and Amplivox each submitted specimens to United similar to
6 the MS50. These are Trial Exhibits 48 and 49. Amplivox
7 Minilite, Exhibit 48 and the Electrovoice unit, Exhibit 49.

8 I would propose at this time to call our expert
9 witness, Mr. Romanow, your Honor.

10 THE COURT: Let's take our morning break of ten
11 minutes.

12 (Recess.)

13 a 3B

14

15

16

17

18

19

20

21

22

23

24

25

MR. JANICKE: Your Honor, if the Court has a

planned schedule of daily activity, I would appreciate knowing

it so that we can plan accordingly.

THE COURT: My normal schedule is to start at

10:00, we will take a ten-minute break at around 11:15 to

11:30, in that area, and then we will break for lunch at

12:45 or thereabouts. We will come back at 2:00, we

will take a ten-minute break then around 3:15 to 3:30, and then

we will adjourn at 4:45.

Because of my compulsion for symmetry, the morning

and the afternoon are identical. They are each two hours

and 45 minutes long with a 10 or 15-minute break exactly

in the middle.

MR. JANICKE: Thank you. To clarify the record

on our exhibits, we now have 139 of them submitted. Mr.

Bradley has informed me that he agrees to the admissibility

of 1 through 139.

Is that correct?

MR. BRADLEY: That is correct.

xxx

(Plaintiff's Exhibits 1 through 139 were received

in evidence.)

MR. JANICKE: Mr. Frank Romanow.

FRANK FREDERICK ROMANOW, called
as a witness by the plaintiff, having been first duly
sworn, was examined and testified as follows:

DIRECT EXAMINATION

BY MR. JANICKE:

Q And that is pronounced "Romanoff" as though it
had a double "f" at the end?

A That's correct.

Q Would you please outline for us your educational
background?

A I graduated from the Polytechnic Institute of
Brooklyn, which is now called the Polytechnic Institute
of New York, in mechanical engineering, with a degree of
cum laude M.E. in 1930.

I received a masters degree in mechanical engineering
in 1933 from the same institution. I continued my
graduate work at various institutions, Columbia University
New York University, the Polytechnic Institute of Brooklyn,
until about 1939, finished the work for a doctor's degree,
but didn't finish my dissertation because of the war, because
of starting to do war work.

Q In what fields were your graduate studies
concentrated?

A They were concentrated in mathematics and physics.

1 gwb-3 Romanow-direct

2 and acoustics.

3 Q What course work you undertake in acoustics?

4 A I took a graduate course being given by Professor
5 Linsay, Bruce Lindsay.

6 Q What did that course include in the way of subject
7 matter?

8 A It included the wave propagation of different
9 kinds, spherical plane waves, in conduits, tubes, acoustic
10 filters, some work in transducers, various transmission
11 phenomena and media, that sort of thing.

12 Q Were you elected to any academic honor societies?

13 A Yes, I was. I was elected to Delta Kappa Pi,
14 honorary fraternity at the institution, to Sigma Si, Tau Beta
15 Pi. There was another one.

16 Q Pi Tau Sigma?

17 A Pi Tau Sigma, which is a mechanical engineering
18 honorary society.

19 Q Have you done any teaching in the field of
20 acoustics?

21 A Yes, I have.

22 Q Under what circumstances?

23 A It was necessary for us to give instructions to
24 some of the youngsters who came to the Bell Telephone Labor-
25 atories. We felt that although they might have a general

1 gwb-4 Romanow-direct

2 course in acoustics it would be proper to give them more
3 instructions in transducer design. So I taught a course
4 which was called Principles of Electroacoustic Devices.

5 Q How long a time did that course run?

6 A It ran a full year, equivalent of 30 semester
7 hours.

8 Q Did the subject matter of your course include
9 probe tubes?

10 A Yes, had a small section on probe tubes.

11 MR. BRADLEY: Your Honor, I will stipulate to
12 Dr. Romanow's qualifications, if that will be of any assistance.

13 MR. JANICKE: From here on, your Honor, I will
14 be getting specifically to the historical significance as
15 someone working at Bell Labs in the art.

16 THE COURT: All right.

17 Q At Bell Laboratories in the period after 1949,
18 was a text by Mr. Beranek in use?

19 A I have the text here and I don't recall the name
20 the time. I think the publication of the text was in '49.

21 Q Yes.

22 A I immediately bought a copy of it and used it and
23 many people in my section used it. There were other copies
24 around, but I had my private copy.

25 Q In the period of the 1950's, what would you say

gwb-5

Romanow-direct

was the most commonly used standard text for acoustics work in headset design?

A Well, Beranek was one of the textbooks. There were really not many available that one could go to. There was some background material of that kind, but there was no textbook that you could go to.

Q Was Beranek on acoustic measurements the most commonly used in the fifties?

A It was the most commonly used.

Q During your work for Bell Laboratories, did you author any published articles and are you named as an inventor on any patents?

A Yes, I have published with some of my other colleagues some five articles in various publications, and I have also been named and am the holder of ten patents.

Q Are any of your articles cited by Beranek?

A Yes, they are.

Q During your work at Bell Labs, did you become a fellow of the American Acoustical Society?

A Yes, I have been a fellow of the Acoustical Society for over 20 years.

Q When did you first begin work at Bell Laboratories?

A 1930.

Q Would you briefly describe your work assignments

1 gwb-6 Romanow-direct

2 at Bell Laboratories up to the time when you were placed in
3 charge of the department responsible for headsets and hand-
4 sets?

5 A Until what time?

6 Q Yes.

7 A My work first started on the design of various
8 kinds of transducers. We called transducers instrumentation
9 that convert sound into electrical energy or electrical
10 energy into sound energy. So until about '39 I did a
11 great deal of work in designing various kinds of transducers,
12 microphones, receivers, crystal receivers, all kinds of things
13 of that kind.

14 Q When did you first become a supervisor at Bell
15 Labs?

16 A I became a supervisor in 1936.

17 Q And what was your supervisory capacity then and
18 who did you supervise?

19 A I supervised one to two people at the time and
20 then--

21 Q Were these people members of technical staff?

22 A Yes.

23 Q What did it mean to be on technical staff at
24 Bell Labs?

25 A At that time it meant to have a degree in engineering or

1 physics or any of the sciences.

2 Q That was required to be a member of the staff?

3 A That was required.

4 Q And you initially supervised one or two of these
5 people?

6 A Right.

7 Q You had originally been a member of technical
8 staff yourself?

9 A Yes.

10 Q What did your group do, if you can summarize for
11 us the projects, during the thirties and forties?

12 A I have to look back a little bit. It goes back
13 thirty and forty years now. I need a little bit of aid.

14 In 1938 to 1940, for example, we designed a
15 hearing aid. It was called the Orthotronic hearing aid.
16 We also designed microphones, we also designed telephone re-
17 ceivers and microphones for the broadcast trade.

18 Q When did you become a department head?

19 A I became a department head in 1951.

20 Q Were there sub groups within your department?

21 A Yes, there were four sub groups, one on measurement
22 acoustical measurements, one on mechanical design, one on
23 transmitter design and one on receiver design.

24 Q Those four groups made up your department?

gwb-8

Romanow-direct

1
2 A Yes.

3 Q And you supervised from 1951 until when?

4 A Until my retirement in 1972.

5 Q What kind of work was your group assigned to from
6 1951 onward?

7 A Well, design of telephone transmitters and re-
8 ceiver, and headsets was part of our assignment. We also de-
9 signed some underwater devices, instrumentation that went under
10 water for the war effort.

11 Q Did your group do anything with respect to the
12 picturephone?

13 A Yes. We designed the mechanical phases of the
14 picturephone.

15 Q As of 1961, would you please describe the back-
16 ground knowledge and level of skill of persons working in
17 your group under your supervision?

18 A At that time almost all people who worked in the
19 group had a master's degree in one of the sciences. Our
20 policy after the war changed, we felt that they needed better
21 and firmer education in the sciences. So what we did is
22 we might take in persons at the Bachelors level, but then
23 they were required to continue their education in order to
24 remain at the laboratory Masters level. There were also
25 people that had Doctors degrees in various sciences,

gwb-9

Romanow-direct

electrical engineering and physics, in statistics.

Q What would be the significance of a doctor's degree in statistics to your group's work?

A Well, we did some field work in which we took the devices that we had designed, we would take them out in the field and we would try them out. It would be important to know the statistical aspect because we couldn't go and make thousands and thousands of measurements, apply our devices to thousands of people. We had to do it with small samples. So it was important for us to know whether the sample was representative.

Q Your group was responsible for headsets at that time, among other things, is that right?

A Yes.

Q Were any statistical studies or human engineering evaluations done with respect to headsets?

A Yes there were.

End 4A

1 4b am gwrfl

Romanow-direct

2 Q What would you be looking to determine in the way
3 of human factors?

4 A It would be paramount to us whether the supposi-
5 tions under which we had designed a headset would really
6 hold in the field. The question would be was it really
7 comfortable, could it be placed on your head easily, was it
8 stable.

9 Q Are you speaking about electrical stability or
10 mechanical?

11 A I am thinking of both, mechanical stability but
12 also electrical stability, and we would be interested in
13 the transmission aspects of the device that we had designed.

14 Q You couldn't determine these factors by calculation?

15 A You could anticipate them but you could never really
16 be sure because the reaction to comfort and to stability
17 was very difficult to find out in the laboratory.

18 Q Referring again to 1961 and your group at Bell
19 Laboratories of which you were supervisor, what was
20 the acoustics experience of the people you supervised as
21 of that time? Did they have many years or few years?

22 A Many of them had 30 or more years of experience,
23 because 1930 was followed by the depression years and we
24 didn't take on many new people until after the war, 1945 or
25 '46. So many of these people who worked in this area had

1 Cwrf 2 Romanow-direct
2 a great deal of experience.

3 Q Was one of the people in your group at that time,
4 1961, Mr. Lou Morrison, who subsequently worked for
5 Roanwell?

6 A Yes, indeed.

7 Q In 1961, about how many years acoustic experience
8 did he have?

9 A He had probably about 32, 33 years of experience,
10 in that order.

11 Q I show you now Exhibit 17, which is the HS-33
12 headset about which United Airlines testified. Would you
13 describe that for us and how it works?

14 A Yes. It is a typical headset of that era. In
15 order to minimize pressure points, rubber portions,
16 rubber caps, rubber covers have been added to this.
17 You wouldn't have it without it. So rubber covers have been
18 added to it in order to make it more comfortable.

19 Q What pressure points do you speak of?

20 A The pressure points occur in the ear on the
21 auricle just about here in this region in here.

22 Q Does auricle, spelled a-u-r-i-c-l-e, refer to
23 what we laymen call the ear and not the internal part of
24 the ear?

25 A The outer ear would be the layman's term.

1 gwrf 3 Romanow-direct

2 Q That is the auricle?

3 A That's the auricle, yes.

4 Q There were pressur points there?

5 A Yes, the pressure points would be first generated
6 here, the protuberance in the auricle, but they also would
7 generate, as time goes on and many people had to wear them
8 for a long time, would be generated on the other portions
9 of the ear.

10 Q What would be the wearer's reaction to that?

11 A Well, often the pressure points were generated for
12 two reasons. First of all, you wanted to get good
13 transmission, so you put it on this way and you had
14 a headband that has quite a little bit of tension in there.

15 Q Why was there so much tension?

16 A In order to securely mount the two receivers on
17 your ear. So there would be quite a little bit of tension
18 in there.

19 The other problem that would be generated is
20 you generate heat internally in your ear. In this
21 particular instance the cover was made of rubber. So
22 this was one of the problems that you had.

23 There was an additional problem. As you put this
24 on your ear, you find that often the headband, although it
25 had two of these bands in here, it wouldn't all the time sit

1 gwrfr 4 Romanow-direct

2 securely because the way it was mounted it simply wouldn't
3 sit securely on your head and often one of the headbands
4 would be the one that was really firmly on your head and it
5 wouldn't take very long that you could feel all the ridges
6 in the headband and it would become, with time, quite un-
7 comfortable.

8 Q That 33 has no means for transmitting the voice of
9 the wearer, does it?

10 A You are talking about this?

11 Q Yes.

12 A I am not familiar with all these numbers. No,
13 it does not have anything to transmit voice.

14 Q How would the voice typically have been transmitted
15 in an aircraft use of that?

16 A In many situations there would be a microphone
17 that you hold in your hand and that you would then place
18 in front of your mouth and then put it away again.

19 Q If you had the headset on in position as it is
20 designed to be worn, would that have an effect on your
21 ability to talk to other people in the cockpit?

22 A When it was mounted securely for you to receive
23 the best transmission, in this case, it would be difficult
24 or impossible to talk to the adjacent person.

25 THE COURT: That could be remedied by using one

1 gwr 5

Romanow-direct

2 earphone?

3 THE WITNESS: There was so much noise very often
4 in the cockpit area that if you wanted to get the best
5 transmission from a distant point, you would have to put
6 both of them on.

7 THE COURT: Isn't that true of the patented head-
8 phones or headsets, that it only uses a plug in one ear?

9 THE WITNESS: Yes.

10 May I add to that?

11 THE COURT: You are probably going to say the
12 jet engine has cut down the noise.

13 THE WITNESS: No, engineering has cut down the
14 noise in the cockpit. So that may be different from 61.

15 Q I show you now Plaintiff's Exhibit 7, which is the
16 Western Electric Model 52. Are you familiar with this
17 headset?

18 A Yes, I am.

19 Q How long has that been around?

20 A I beg your pardon?

21 Q How long has it been on the market? Let me ask it
22 this way:

23 Was it on the market in 1961?

24 A Oh, yes. It had been. It had been on the market
25 I would say at least five or six years before that.

1 gwrf 6

Romanow-direct

2 Q Did your group at Bell Laboratories have any work
3 to do with the WE-52?

4 A Yes, we did. We did a great deal of work on the
5 transmitter and we did a great deal of work on the transmitter
6 and we also did a great deal of work on the mouting and head-
7 band that went with it.

8 Q Would you describe how that headset works?

9 A This headset is put on like this and it has to
10 be adjusted. It slides up and down in here. So now you
11 mount it in a position as well as so that it is at the
12 corner of your mouth.

13 Q Why is it preferred to do it at the corner of the
14 mouth?

15 A There are plosive sounds as a reference that comes
16 with "but" and "put" and there is a considerable amount
17 of DC stream that issues from your mouth which you do not
18 want to necessarily pick up because that would create a
19 great deal of distortion in the instrument.

20 That goes for any instrument then and today.

21 THE COURT: Did you say DC stream?

22 THE WITNESS: Yes. If you put your fingers
23 in front of your mouth and say put, put, you find there is
24 quite a little bit --

25 THE COURT: I never heard that called DC stream.

1 gwrf 9

Romanow-direct

2 is very think, it is just one piece of tubing or two
3 pieces of tubing, and in order to reduce the discomfort
4 that is engendered by having just one piece of tubing on
5 top of the head, there is some thick padding, foam rubber
6 padding on top.

7 The microphone is mounted on a boom and there
8 are adjustments here that I can see on here. There is a
9 rotational adjustment and also the boom slips up and down.

10 So in a way it is similar to the Western Electric
11 52 headset.

12 Q Why is there so much need for adjustment?

13 A Well, it is necessary to put the boom and the micro
14 phone into this location here at the corner of the mouth,
15 so that's why this adjustment is necessary.

16 Q The testimony of United Airlines is that that
17 headset was rejected by them because of its clumsiness.
18 Can you estimate about what the weight of it is?

19 A Well, it is of the order of seven to eight ounces,
20 I suppose, like many of the others. It seems to be a little
21 lighter than some of the others.

22 THE COURT: You would have to have better evidence
23 than that, I think, unless he is shown to be an expert on
24 estimating weight.

25 MR.JANICKE: The figures are agreed, your Honor.

1 gwrf 10

Romanow-direct

2 THE COURT: Then why don't you state them for the
3 record?

4 MR. JANICKE: I believe the testimony of United
5 in the agreed facts is that each of these headsets weighed
6 about a pound or slightly less.

7 Q I show you next Plaintiff's Exhibit 12, the
8 Carter headset submitted to United and rejected for the
9 same reason.

10 Does that work essentially the same way as
11 the previous Airmed model?

12 A Yes. It seems to do the same sort of thing.
13 It has a headband. It has some adjustable features in
14 here. I notice the end of the headband can slide up and
15 down in here. The microphone can rotate like this and move
16 up and down. So essentially I think they are very much
17 the same as we have seen here before.

18 Q Is that Carter unit also a circumaural headset?

19 A Yes, it is a circumaural headset.
20
21
22
23
24
25

Q The pads go around the ear?

A Yes. The pads go around the ear.

Q What do you call the kind of headset where they don't surround the ear, like WE-52 where the receiver unit is against the ear, is there a word for that?

A Sometimes it is called just an earset. Sometimes it is called a platform type because it just is right on top of your ear. Depending upon what gave you are in, people just call it a headset but if the question comes up between something like this, they call it platform-type or they call this a circumaural type.

Q I would like you to refer to trial Exhibit 11 in the trial exhibit book.

Trial Exhibit 11 is agreed to be a representation of the Telex twinset unit with a boom microphone or at least something very similar to it as nearly as we could find.

Are you familiar --

THE COURT: Wait a minute. What I am looking at is Plaintiff's Exhibit 11, is a brochure on Amplilite.

MR. JANICKE: Excuse me, your Honor. It is the 11th page -- Exhibit 14. Page 11.

Q It is Exhibit 14 and the 11th page near the back shows a drawing called Attachment 1.

THE COURT: I only have eight pages in Exhibit 14

2 plus page 12 is a list of ARINC documents.

3 MR. BRADLEY: Your Honor, it is actually page 8
4 of the document.

5 MR. JANICKE: Originally page 8 and marked in the
6 bottom corner page 11.

7 THE COURT: All right.

8 Q Attachment 1 of the ARINC document. Do you
9 have that?

10 A Yes.

11 Q That is Aeronautical Radio, Incorporated. Are
12 you familiar with that drawing?

13 A Yes.

14 Q What does it depict in the way of a headset and how
15 does it work?

16 A It depicts a headset of conventional design
17 as far as the -- well, really overall conventional
18 design. It has a boom there in which the microphone is
19 mounted and it has receivers like somewhat smaller ones than
20 the ones we have looked at but not really miniature and
21 it has a headband, a headband with two pieces of wire
22 that go over the head.

23 Q I would like you to compare that to Exhibit 13,
24 which is the Telex Twinset. Do you see any differences
25 between the drawing in Exhibit 14 and the Telex Twinset?

2 A Well, the area where the head -- while this
3 particular embodiment permitted the receivers to be mounted
4 on your ear, this one in here calls for mounting the
5 receivers on the side and then has two ear tubes that
6 go in there and of course, it doesn't have a boom microphone.
7 it is without a microphone.

8 MR. JANICKE: The record will show that the witness
9 first referred to the ARINC drawing and secondly to the
10 Telex Twinset.

11 Q Would there have been any purpose to put two bands
12 over the head as shown in the ARINC drawing as opposed to
13 one band in the Telex Twinset?

14 A I really think that this a recognition of the
15 fact that two --that one of them in the headband, one
16 of these was never really very useful because it didn't
17 mount on the head, so people recognized, might as well
18 use one because the other one doesn't do much work.

19 Q You have heard the testimony of United that when
20 they tried this Telex unit with a boom microphone,
21 the headset wouldn't stay in place, it would walk around,
22 was their phrase. What was the reason for that?

23 A Are you referring to the headset as pictured
24 here?

25 Q Yes. With the boom microphone.

1 A Well, I think it is a problem that you have, as
2 you put a microphone on a boom and you reduce the pressure
3 in order to have not an excessive pressure points on your
4 ear itself, you always have the tendency, people who use
5 these, operators, is to reduce the pressure. Once you
6 have reduced the pressure and you have a boom so that the
7 inertia of much of your device is far enough away from
8 your ear, it just isn't firmly on your head.

9 Q Is there a simple expression for a moment of
10 inertia we can use for components such as in a headset?

11 A You refer to the moment of inertia as a mass
12 multiplied times R squared the distance of your mass where
13 the center of gravity is to this support point or to the
14 axis around which it may rotate.

15 Q In the case of the Telex Twinset, that axis would
16 be near your ear?

17 A No, it would be further away. We are talking
18 about this again?

19 Q Yes.

20 A Well, the boom in here has a large mass. The
21 microphone is mounted in here.

22 Q My question is, where was the axis?

23 A The axis would be right in this support region, where
24 ever that was.
25

2 MR. MANICKE: Let the record show the witness was
3 indicating just above the ear.

4 THE WITNESS: Somewhere in the ear neighborhood.

5 Q So you would measure the R or R squared in the moment
6 of inertia from the ear area down to the boom mike?

7 A Down to the boom somewhere because the center of
8 gravity of the mass, the tube contributes a little bit, but
9 the heavy mass, the mass that is really the important one
10 is the microphone itself, so that the center of gravity
11 would be right in the middle of the microphone, maybe
12 moved up, just a wee bit up towards the boom but not on the
13 boom but towards the boom.

14 Q If I understand your testimony correctly, every
15 specimen of the headsets actually submitted to United
16 Airlines, including the Telex with boom microphone in
17 front of the mouth, they all employed boom microphone,
18 which you have told us should be mounted by the corner of
19 the mouth, is that right?

20 A Correct.

21 Q Was there a design reason for not mounting the
22 microphone, say, away from the mouth, perhaps in the area
23 of the ear?

24 A There were very valid reasons for that. The
25 noise pressure -- the largest noise pressure generated by you

mouth is right here, somewhere near your mouth where the lips, the vocal cords and the mouth cavity have generated the best articulated sound and that is somewhere near your mouth, so that's the reason why all these sets put the microphone or try to put it near the mouth corner.

Now, if you were to move it upward, say the microphone into the ear position somewhere, you lose a considerable amount of pressure and the pressure, a quick calculation, but also by measurement we found it is more than about 15 DB.

Q 15 DB loss if you move the microphone from the mouth to the ear, is that based on some kind of an average distance or head geometry?

A That's based on the distance between the corner of your mouth and to the ear position somewhere in here. And it is a distance. One way of calculating, it is a very simple formula, the distance falls off inversely as the -- the pressure falls off inversely as the distance. If you are, say, at one inch --

THE COURT: Isn't it some exponent of the distance?

THE WITNESS: No. The sound power falls off as a square of the distance but the pressure falls off inversely as the distance. We are talking about DB, so what we do

2 is we take this, we take the pressure at this point,
3 we take the pressure at the ear position, then we take
4 the 20 times the log of this ratio, if it were one inch
5 here and you were six inches away, six to one, the log
6 of six to one turns out to be .677.

7 I recall the log of 2 and I recall the log of 3,
8 so you add those two, that turns out to be .77. You
9 multiply two -- you take 20 times the log of this ratio --

10 Q And the log is .77?

11 A Yes.

12 Q So you take 20 times that and that gives you the
13 decibel drop from mouth to ear?

14 A Right. And that turns out to be 15.40 DB. By
15 measurement we found it was more than that but that is
16 an order of magnitude.

17 Q Is that a lot in terms of the practical use of
18 a headset?

19 A It's a great deal. In telephone practice, what
20 you try to do, you try to keep it within transmission over
21 the continent, you like to keep it within three or four DB,
22 so the loss of 15 to 16 DB is a large loss.

1 Q How does the 15 db loss work into a signal to
2 noise ratio, if at all?

3 A Well, noise usually comes from a distant point,
4 distant or surrounds an observer. If you are in a cockpit,
5 the machinery noises, all kinds of things that come in so
6 you will find that you are literally immersed in noise. The
7 noise say, at the mouth or at the ear, will be about the
8 same. This holds for an operator, for instance, in a central
9 office. They are immersed in noise. Other people around,
10 the other operators. They generate noise. They do talking
11 so you find that you are in a noisy atmosphere.

12 Now, if the pressure was at the point here, say,
13 a certain amount, and then the pressure was reduced by, say,
14 16 db, the noise would not be reduced that much, it wouldn't
15 be reduced at all, so that you found you lost -- your
16 signal to noise ratio degradation would be of the order of
17 16 db.

18 Q What would be the effect of users with that kind
19 of loss?

20 A At the distant end when the operator would be
21 talking or so, it would cause innumerable repetition
22 counts. What we are referring to, repetition count is saying,
23 I didn't quite hear. They are often involved in trans-
24 mission of numbers. In numbers, where you don't add anything
25

zb-2

Romanow-direct

to knowledge, there is no sentence involved, it is just a short number, it would cause a great deal of repetition.

Q Was repetition count one of the design factors you worked with at Bell Labs?

A Yes.

Q I understand that every time someone says, would you please repeat that, that is one in the repetition count?

A It would be.

Q As of 1961, were there any known techniques for moving the microphone from the vicinity of the mouth to the vicinity of the ear and not having that 15 or 16 db loss?

A Well, we made one attempt. We developed what we referred to the Y1 unit. It had an exponential horn, it came from the mouth region in here and the transmitter or microphone was put near the ear position, so it conducted the sound from the corner of the mouth to the ear position.

Q What kind of receiver apparatus was in that head?

A We used the usual one, the standard receiver.

Q The same as in the WE52?

A Yes.

Q In acoustics, what is the definition of a horn?

A A horn is a device, a sound conduit, which has a variable cross-section. It has a larger cross-section at

1 the orifice and a smaller cross-section for the -- I am
2 referring in this case to the microphone where the tube, that
3 is the horn, the small portion of the horn enters the micro-
4 phone.
5

6 Q And the large portion of the horn would be down
7 by the mouth?

8 A Yes.

9 Q Does that cross-section vary continuously along
10 the length?

11 A In our design it varied quite continuously.

12 Q What were the circumstances under which you built
13 the Y1?

14 A Well, we were trying to improve and do our Western
15 Electric microphone headset and also we were trying to devise
16 something that would be better than the Larkin set.

17 Q What happened to the Y1?

18 A Well, the Y1 we could never get the response quite
19 as good as with the boom mounted microphone and secondly,
20 when we put it in the field, its weight was not reduced to
21 the extent that we wanted it to reduce it. It still remained
22 to be of the order of five to six ounces, so the step for-
23 ward that we hoped for was simply not good enough and although
24 we put it in the field, we abandoned it.

25 Q Was it ever commercially marketed in the Bell
System?

1 that had an earpiece, a platform type of device so that it
2 had in many ways the same discomfort that earlier ones had
3 except it had been reduced in weight so that the headband
4 pressure could be reduced and in that way was more comforting.
5

6 Q The next element is low weight. What do you esti-
7 mate the weight of the Y1 was?

8 A The Y1 was five to six ounces.

9 So from that point of view, the weight of the
10 Larkin unit, which was of the order of one ounce, there was
11 a large difference between the two and this large difference
12 translated into further reducing the headband pressure sub-
13 stantially.

14 Also the user comfort came about in the Larkin
15 set, there was an earpiece, there was no an earpiece in the
16 standard way, but a little tube and a little nipple that
17 went into your ear --

18 Q Let me refer you now to Trial Exhibit 18, which is
19 the Plantronics MS50 headset, which is agreed to be the
20 commercial version of the headset in the Larkin patent.

21 Would you describe how the MS50 works?

22 A Well, the MS50 has two transducers. The
23 receiver, which is mounted at this end from which issues the
24 little ear tube, and the nipple that goes into your ear in
25 a body, in a support body, and on the other side there is

zb-6

Romanow-direct

1 the microphone portion of it and the microphone itself has
2 a little tube and -- a little nipple and there issues in here
3 a tube, oh, maybe six inches in length or so, which permits
4 one to mount it -- since it is mounted on the side position
5 and on your spectacles if you like, you can move it back
6 and forth on your spectacles.
7

8 If you use a headband, you can mount it in any
9 position that you like and you get the nipple right close to
10 the corner of your mouth. Then you plug the -- this goes
11 into your ear and the experience with this kind of thing is,
12 our experience has been that after a while you don't even
13 know that it is in your ear. It is very so t indeed and
14 there are different sizes of nipples so that you select the
15 one that properly fits your ear and there is virtually no
16 pressure.

17 Q You have in your hand, I think, a small plastic
18 headband that goes with the headset.

19 A Yes.

20 Q Would you show the Judge how the headset unit
21 attaches to the headband?

22 A The headband slips into a little projection
23 in here on the housing. Here we are.

24 Q How would you mount the headset if you used a
25 headband?

1 A There it is.

2 Q Does the capsule part of the headset have to
3 be in any particular location? The capsule portion?

4 A You are talking about this portion of it?

5 Q Yes, the black housing.

6 A Well, you can slide it back and forth if you
7 like. It is not critical except that you want this tube to
8 be, to get into the corner position in here. But it is not
9 critical except for that.

10 Q How is that worn on either side of the head if
11 you wanted to switch it?

12 A You slip this out and you can turn this thing,
13 you turn it until you get it -- I don't want to take it out.
14 All you need to do is you slip it in here from the other
15 side and then this one is rotated in this position and then
16 it fits into the other side.

17 Q Returning for a minute to the Y1, you have told
18 us about the Y1 comparison to the Plantronics MS50 with
19 respect to user comfort, low weight. How about versatility?
20 You have described how the 50 works. What is the Y1 versatility
21 in respect to adjustment and so forth?

22 A It was versatile, but it is a relative term.
23 Mounting it on your ear and doing this kind of thing, it just
24 was maybe a little less versatile but it was versatile.
25

1 zb-8

Romanow-direct

2 Q And finally we come to adequate voice transmissi
3 You told me that the Y1 did have a degree of voice trans-
4 mission adequacy, is that right?

5 A Yes, it had. We always had a little bit more of
6 a problem with the Y1. One of the requirements for this
7 particular horn was that this volume between the diaphragm
8 and the orifice, the small orifice now of the horn had to be
9 small and I am referring to the orifice that is at the
10 diaphragm position. That volume had to be small and if we
11 made it small there were other effects, that high frequency
12 effects occurred, so although we made what we considered
13 a satisfactory design, it wasn't, at least in my own judgment
14 not as good as I wanted it to be.

15 MR.JANICKE: Your Honor, I am about to go into
16 a new topic at this point. Would you prefer to recess?

17 THE COURT: All right. I take it this new topic
18 will take a considerable time?

19 MR.JANICKE: Yes, your Honor. About 20 minutes.

20 THE COURT: We will take our noon break now. We
21 will come back at two o'clock.

22 (Luncheon recess.)

23

24

25

2:00 P.M.

2 F R A N K F R E D E R I C K R O M A N O W resumed.

3 THE CLERK: You are still under oath, sir.

4 DIRECT EXAMINATION (continued)

5 BY MR. JANICKE:

6 Q Mr. Romanow, this morning or this afternoon prior
7 to the recess you described for us how Bell Laboratories
8 constructed the Y-1 headset with an acoustic horn and what
9 became of it. And my question to you this morning was
10 were there known techniques for being able to move the
11 microphone from the vicinity of the mouth up to as far away
12 as the vicinity of the ear and not suffer the 15 to 16 d.b. drop
13 You mentioned the horn was one technique for doing that.
14 I am talking about any time prior to 1962.

15 Was it known that you could use a probe tube to do
16 that?

17 A It was known that you could use a probe tube
18 but not very satisfactorily.

19 Q Did you have any experience with the probe tube
20 at Bell Laboratories?

21 A Yes.

22 Q Would you describe what your experience or your
23 group's experience in the use of probe tubes was? And you
24 can refer to these enlargements of Exhibit 131 and 29, if you
25

2 wish.

3 A Yes.

4 THE WITNESS: May I go over there?

5 THE COURT: Yes.

6 (Witness leaves stand.)

7 A This is typical probe tube response. It tells
8 you what the pressure diminution is at the diaphragm of
9 your transmitter.

10 Let's talk about this. Let me describe to you
11 a probe tube a little bit before I go into that other chart.

12 MR. JANICKE: Let me state for the record that
13 that the first chart is Fig. 16.14 from Beranek.

14 THE WITNESS: This is a typical probe tube as you
15 see it in this chart, and it is used for measuring the
16 pressure in confined places where you couldn't put a larger
17 microphone. So you have to make the point at which you are
18 going to pick up the pressure and where you want to know the
19 pressure, you have to put a very small tube.

20 This insert that you see in here, which is typical
21 of a hearing aid insert, might be placed in your ear. Here
22 is a receiver in back of it. Now what you intended to do is
23 to measure the pressure in your ear. So you have this long
24 tube that goes to this particular point in here, which is
25 the orifice of the insert, and then you conduct the sound

gwb-3

Romanow-direct

and you go down here in a condensor mike of a particular make, it might be a Western Electric 640AA microphone. On top is the connection. What it does, it takes this probe and attaches to the microphone and the design intent to use this probe tube properly is to make the space between the end of the tube, which projects somewhat to this point in here, make the space as small as possible, which is an important feature about that. Otherwise you would lose the pressure to a certain amount.

After you make a calibration of this device and say to yourself the following thing: This microphone when put into the open air would record a certain pressure and when you put the tube in like this and attach it to it, the pressure would be reduced substantially.

At the low frequency as shown by 100 cycles or thereabouts in here --

MR. JANICKE: Let the record show that the second chart, Exhibit 29, is Beranek's figure 16.18.

A The pressure reduction is very small indeed. If I read it off the chart it might be 2 d.b., but when you come down here you find the pressure reduction at 3000 cycles which is the upper end of the important frequency range in telephone communications. It is as much as 32 or 33 d.b.

This particular tube was a tube that had a

gwb-4

Romanow-direct

length of 4.5 inches. Its inner diameter was 25 mils, .025 inches, 25 mils, so it is a very small tube indeed. Some of the characteristics of this tube are as follows: At low frequencies it joins into the line here, the zero line, and there would be no loss. There is a resonance effect which is difficult to see, but if you draw a straight line you would find some sort of resonance effect. Above, say, 1000 cycles, somewhere at 1300 cycles, the first tube resonance appears. This tube resonance you can calibrate approximately from the length of the tube, and you can make an accurate calibration if you know all the constants of the microphone, but if you don't know that you can approximate it, make an approximate determination by using the length of the tube and assume that it is an open tube.

So you would arrive at something like 1500. In this particular instance it turned out to be 1300, which is quite typical for this.

Q What is it that happens?

A The first tube resonance occurs. You associate this with a tube resonance. As you see it is 1300. The next one should occur at twice the frequency, 2600. There it is. The next one should be three times as much, 3900 and there it is. The next one should be four times 13, and that is 5200. So this is clearly identified with the resonance of the tube.

1 gw pm lb 1 Romanow-direct

2 THE COURT: Is that each half-wave?

3 THE WITNESS: That would be half-wave for an
4 open tube. That's exactly right.

5 Now, one thing of importance in here is in
6 cases where the tube is short and you don't talk about
7 a short tube when you attach it to a microphone, you talk
8 about, as was mentioned this morning, a port or you talk about
9 an orifice. If this had been a very short tube, let's
10 make a determination, a quick determination, how short it
11 would have to be for this first tube resonance to disappear.

12 Well, if you took, for instance, and reduce it
13 by -- this was 4.5 inches -- you made it one-third as
14 much, say 1.5 inches, you would find this first resonance
15 occurred at three times that frequency, directly
16 proportionate to the length.

17 So that this frequency now, we said it is
18 approximately 1300, would go to 3900. So it would go to some
19 point in here. So that in short tubes, referred to usually
20 as orifice or ports, the wave properties of the tube do not
21 occur.

22 THE COURT: You want to eliminate the tube resonance?

23 THE WITNESS: Yes. So you make it short so they
24 don't have that.

25 Now, there is another factor that is involved

1

gwrf 2

Romanow-direct

76

2

in here. Although we have been referring to this chart as having to do with the tube, obviously this tube is in combination with the microphone, it isn't the tube itself.

3

4

5

6

7

8

9

10

So the losses, for instance, that occur in here are twofold or threefold, actually. They are determined by the attenuation that occurs in the tube. They are also determined by the area of the tube and they are determined by the mechanical impedance of the diaphragm in combination with the front volume.

11

12

Q What diaphragm and front volume are you speaking of?

13

14

A We are talking about a front volume and diaphragm of the microphone to which this is attached.

15

16

Q There is the volume of air between the tube and the diaphragm?

17

18

19

20

21

22

23

24

25

A Right. There is a small volume of air and in order to use these devices properly, you make that as small as possible. So if you were to use -- this is rather a discouraging kind of story in here because with these high losses of 35 db, we talked about 15 db before as being very detrimental to transmission, if you got these losses at the high frequencies you just are steered away from using probe tubes in combination with microphones and the microphone has, in addition, to

1 be of high impedance. As I said before, the area of
2 this tube has to be of the right kind.

3
4 Q What is the effect of area? As the area gets
5 larger what happens?

6 A As the area gets larger, these losses diminish.
7 When you think of using small probe tubes, you have in
8 mind using a small area. So you certainly don't want to
9 make it very large. If you don't make it very large, then
10 you get losses. Typical for these small devices with such
11 small areas you get very large losses.

12 If you are not aware what the impedance of the
13 microphone should be, then you get an additional high loss.
14 So it is a combination of all these factors in adapting to
15 any other purpose.

16 Q How long would you estimate, if you can, had
17 probe tubes been in use for purposes such as you have
18 described at Bell Laboratories?

19 A I have used probe tubes since 1933.

20 Q Did other workers in your group use them?

21 A Many other people used them. It was a quite
22 standard way of using probe tubes for the purpose of
23 measuring the pressure at small points.

24 Q Beranek Fig. 16.14 was a standard way of using a
25 probe tube?

1
2 A Yes, indeed it was.

3 Q In all the time you supervised or worked at Bell
4 Laboratories -- and when did you first go there again?

5 A 1930.

6 Q And you retired --

7 A 1972.

8 Q Any time prior to 1962, are you aware of anyone
9 at Bell Laboratories who proposed using a probe tube in a
10 headset?

11 A No.

12 THE COURT: Prior to the 1960's was it known at
13 Bell Lab that you could compensate for the falling frequency
14 characteristic of transmission of a probe tube by a rising
15 characteristic in the microphone?

16 THE WITNESS: It was too discouraging. The
17 picture, as you have seen there, was intuitively it
18 was known and discouraging as to the exact amounts as
19 to which that could be done.

20 THE COURT: The principle was known but it wasn't
21 considered to be practical?

22 THE WITNESS: It was not considered to be practical
23
24
25

2 Q Would the compensating rising characteristic of
3 the microphone, if you had such a microphone, be enough to
4 undo this roll-off in the frequency response or are there
5 other factors involved?

6 A Well, as I have mentioned before, it is very
7 important to have the right area in the tube, to have the
8 right front volume in the tube, adjacent to the microphone
9 diaphragm and thirdly, the right impedance of the
10 microphone.

11 Q So regardless of the tubes dimensions, then,
12 there is still something about the microphone, other than
13 its rising frequency response that is important?

14 A Right.

15 Q That is the --

16 A The acoustical and mechanical impedance are
17 proportionate to each other. It is very important to have
18 a high impedance microphone.

19 Q In order to overcome this rolling off effect?

20 A Right.

21 Q Was that known before 1962 as far as you are
22 aware?

23 A I don't think that was known.

24 THE COURT: I am not sure I understand that.
25 Why is it necessary or desirable to have a high impedance

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25

lzrf 2

Romanow-direct

80

microphone?

THE WITNESS: You want to generate a pressure in a small volume. Suppose we had a microphone that had very low impedance which would mean that you couldn't build up a pressure because the microphone would act like a pressure release mechanism. So what you want to do is confine the volume as much as possible.

The optimum would be that you had a closure that would be infinite in mechanical acoustical impedance. Then it could generate the pressure. If you don't do that, there is a pressure release mechanism going on.

THE COURT: I see.

In other words, the microphone diaphragm acts as a load on the chamber?

THE WITNESS: Yes.

THE COURT: The higher the impedance, the lower the load?

THE WITNESS: Right. The higher the impedance --

THE COURT: The lower the loading effect?

THE WITNESS: Well, the higher impedance, the more the volume is confined, the greater pressure that you can generate, right.

Q You have earlier described for us the Larkin headset, the Plantronics MS-50 in terms of its low weight

1 and its comfort factor, versatility and so on, but if you
2 recall the last element reported in the Roanwell report of
3 1962 on that headset was adequate voice transmission for the
4 headset.
5

6 The Larkin headset employs, does it not, an acoustic
7 tube from the mouth to the microphone?

8 A Yes.

9 Q Have you looked at frequency response data with
10 respect to that headset?

11 A Yes, I have.

12 Q Is the response for the microphone and tube like
13 this, this being the Beranek Fig. 16.18?

14 A No. It has some of the wavy characteristics
15 but the characteristic fall-off which would be so detrimental
16 to transmission is not there.

17 Q Do you have any opinion as to why?

18 A Yes. The microphone employed in here is of high
19 acoustic impedance. The front volume connecting the tube
20 is very small. It has a rising characteristic, that is,
21 the microphone has a rising characteristic. And the tube
22 has a larger area than was shown in Beranek's chart.

23 Q Let me look first at the impedance of the
24 microphone. You say that it is relatively high.

25 A Right.

2 Q Are miniature microphones as a class of high im-
3 pedances?

4 A Yes, they are.

5 Q Let's look at the frequency response characteris-
6 tic of the microphone alone. If you used a hearing aid type
7 microphone, as is mentioned in the Larkin patent,
8 miniature microphone, what characteristically is the
9 frequency response of that microphone?

10 A I can't answer for all of them but most of them
11 have a rising characteristic.

12 Q Why is that in the hearing aid design?

13 A Well, people in the hearing aid -- people that
14 are -- have hearing impairments usually lack high frequency
15 hearing is more impaired at high frequencies, so
16 it is standard to design it for high frequency boost in
17 order to make up for the impairment.

18 Q Approximately how much larger is the cross-
19 sectional area of the MS-50 tube compared to the tube shown
20 in Beranek Fig. 16.18, if you know?

21 A Well, this looks to me like, a rough figure,
22 50 mils, maybe the diameter would be about twice as
23 large so the area would be four times as large.

24 Q I would like you to refer now, if you will,
25 to Exhibit 27 in your book of exhibits.

2 A Yes.

3 Q We have agreed findings in this case with respect
4 to that exhibit as follows:

5 4.1 and 4.2.

6 "In 1956 five years before the filing date of
7 the Larkin patent, the Air Force commissioned Western
8 Electro-Acoustic Laboratory to bring together the views of
9 most of the active headset R&D personnel in the country
10 including a panel of experts in the electro-acoustic
11 field in an attempt to solve certain voice communication
12 problems, including those of heavy, bulky headsets then in use
13 in Air Force planes, and the date again is 1956."

14 The next agreed finding referencing this chart
15 is "The panel of experts proceeded to develop lists of
16 all the known transducer types, all the known methods of
17 speech projection from the user, all the known methods
18 of speech reception by the user and evaluation criteria
19 for each of the foregoing groups."

20 Are you familiar with the listings of various
21 methods of coupling speech projection and speech reception
22 in this chart?

23 A Yes.

24 Q You supervised headset designers as you testified
25 this morning. Do lists like this assist them in designing

headsets?

A Well, this is so general a list. When I looked at this, it looked to me like an index to some acoustical text and I'm afraid that wouldn't get anybody started on headset design.

Q Well, at Bell Labs, were you responsible for promotions and salary advances of the workers in your group to any extent?

A Yes, I was.

Q Would you have expected a worker in your group of ordinary skill within the group to be able to design a headset from this list?

A I'm afraid we couldn't get anybody started with this kind of list.

Q Can you give us some examples of what you would have expected people in your group in the period prior to 1962 to be able to do, just examples.

A Well, suppose we had a transducer design, either microphone or receiver and for some reason or another we felt a reduction or a lighter weight was necessary. I could ask several people in my area to design a smaller and more lightweight instrument. I could ask them to do that.

Q Excuse me. Instrument in your terminology means?

A Means a receiver or transmitter. Receiver

1 lzrf 7

Romanow-direct

85

2 or transmitter or whatever goes with it.

3 Q Can you give us other examples?

4 A Yes. And suppose there was -- I would expect them
5 to be able to make some very intricate sound measurements
6 to determine the response of any microphone or receiver.

7 I would expect them to make measurements around the
8 head to determine the pressure falloff. I would expect
9 them to make production design changes. Suppose there were
10 some problems in the field and if they came in and it needed
11 some changes, I would be able to assign it to somebody and
12 he would be able to make whatever improvements were necessary.

13 Q From the WE-52 headset specimen, which is Exhibit
14 7, can you give us a real life example of a project you gave
15 to someone about this headset?

16 A About this headset, first of all, we had a
17 different headband on it. The headband was like some of
18 the ones we have seen in previous exhibits and we wanted
19 to make, create less pressure points so there were some
20 changes made in the headband.

21 This was made much less -- the pressure was re-
22 duced on the other side of the head away from the receiver.
23 There were also considerable amount of cord problems in
24 the field. This arm was not in -- had not been attached to
25 the boom so what would happen is this boom would twist

2 around and break the leads in here because typically they
3 would put them away in a little cabinet and people turned it
4 around to get it into a small place and then continues to
5 turn it in one direction. Before you know it, we had an
6 awful lot of cord breakage, so this was added to it.

7 Typically, this transmitter was redesigned in
8 order to get less what we refer to as packing effects.
9 These were effects that would occur if this is
10 worn a lot, the carbon will settle down below and we would
11 take care of things of that kind.

12 Q Do I understand you correctly that this trombone,
13 so to speak of Exhibit 7, wasn't originally on the 52?

14 A No, it was not. There was just the boom in here
15 and then there was where this is cut off, there was just
16 a little bit of a nob so the boom wouldn't slip out.

17 Q And you gave that to someone in your group to work
18 on?

19 A Yes.

20 Q And he came up with this trombone arrangement?

21 A Right. And it was very effective in reducing
22 cord breakage.

23 Q In your contacts and conversations with other
24 people in the headset or acoustics field, outside of
25 Bell Laboratories, are you aware of whether the use of probe

2 tubes such as shown in the Beranek chart, Fig. 16.14 --
3 excuse me, I have lost the thread of that sentence. It
4 is too long.

5 From your contacts with outside people, outside
6 Bell Laboratories, do you know whether they were aware of use
7 of probe tubes such as shown in Exhibit 101?

8 A Of just the probe tube, for making --

9 Q Well, the use of a probe tube for making measure-
10 ments in a laboratory.

11 A Oh, yes, yes.

12 Q I would like you to look, if you will, at Exhibit
13 30, which is the Olney patent.

14 A Yes.

15 Q Would you describe for us the structures that
16 are disclosed in that patent?

17 A This microphone arrangement, this microphone or
18 this headset, if you like, its purpose is to -- or it
19 is classified as a pressure gradient device. It permits
20 one to distinguish against adjacent sounds to a certain
21 extent and reduce them, so that's the purpose of this device.

22 Q Is pressure gradient the same as noise cancelling?

23 A Yes. The terminology is synonymous.

24 Q How does Olney accomplish that?

25 A He uses two tubes that are spaced a certain

2 distance apart at the mouth position so that when the mouth
3 when voice issues from the mouth, some of the pressure
4 gets at certain portion of it and then the pressure travels
5 for a little distance and then gets to the other entrance
6 and this is what we refer to as the pressure gradient.
7 Then it is conducted up these two tubes to a transmitter.

8 Q Those are the tubes 15 and --

9 A 15 and 16 in the picture, yes.

10

11

12

13

14

15

16

17

18

19

20

21

22

23

24

25

2

Q Fig. 3?

3

A Fig. 3.

4

Q So the voice travels up both of them. What

5

about the noise?

6

A The noise travels up also. So whatever signal to noise ratio obtains at the entrance obtains at the transmitter.

7

8

Q There is a difference in the voice signal that goes into one tube from what goes into the other?

9

10

A Yes.

11

Q But the noise is the same?

12

A The same.

13

Q Does Olney disclose the use of an acoustic tube on the receive side?

14

15

A No, I don't see anything in this patent.

16

Q What kind of receiver apparatus does he describe?

17

A He has a standard receiver.

18

Q Can you give us a type for it? Is it circumaural?

19

A No, this would be of the platform type.

20

Q And the unit is held on the head how?

21

A Used in the usual fashion by headband.

22

Q Have you ever seen the Olney device on the market?

23

A No, I have never.

24

Q Are there any problems of positioning involved

25

at the Olney device?

1 zb-2

Romanow-direct

2 A Yes. It would be the usual problem that you
3 have with a headband and a receiver and where you would want
4 to have it make a good contact, but then there is this
5 further problem. A pressure gradient microphone has to be
6 placed more accurately into the mouth corner position than the
7 usual pressure device. Little changes there will cause
8 more difficulties than in the pressure microphone.

9 Q One of the Roanwell witnesses testified that a
10 movement with a single tube such as in the StarSet, for
11 example, or the Roanwell R70, movement of the voice tube by
12 half an inch could be quite significant in terms of drop-
13 off of the signal.

14 Do you agree with that?

15 A That is correct.

16 Q Is it the same or is it better or worse with
17 respect to a noise canceling version?

18 A The pressure is better than a noise canceling
19 device in the sense it is less sensitive. The pressure
20 gradient or noise canceling microphone is more sensitive to
21 small motions.

22 Q Is there anywhere in the Olney patent where he
23 discloses the use of a single voice tube rather than a
24 noise canceling pair?

25 A Yes, he does. Looking at the patent in Column

zb-3

Romanow-direct

he talks about starting with Line 56.

Q Other modifications of the invention?

A Yes.

Q What does he disclose there?

A While the invention has been disclosed above as a double tube or dipole microphone, it can be adapted to a single tube microphone by omitting the mouthpiece and either one of the tubes 15 or 16. It will be understood, of course, that the retained tube such as 16 will have its free end treated with a suitable terminal resistance which may be silk fabric such as 40 or maybe a tuft of cotton or the like inserted therein, and that the acoustic impedance associated with the other side of the diaphragm will be made suitably low, preferably by increasing the size of the cavity back of the diaphragm.

Q So he is saying to make a larger cavity behind the diaphragm?

A Right.

Q So that the impedance will be low?

A Right.

Q Will the impedance be low as the cavity is increased?

A Yes.

Q How does that compare, that teaching, with

1 zb-4

Romanow-direct

2 what you have told us before about frequency response?

3 A On a whole, this whole device should be overall
4 front cavity and the whole device, diaphragm, etc., this
5 whole thing should be high in impedance so we don't get a
6 pressure release.

7 Q When you say this thing should be, are you referring
8 to the Olney structure?

9 A I am referring to any microphone, including the
10 Olney structure.

11 Q Are you saying that the cavity should be as small
12 as possible or as large?

13 A Should be small.

14 Q Is that directly contrary to the Olney teaching?

15 A It would be contrary to the Olney teaching given
16 here.

17 Q Now, if you will, I would like you to please
18 turn to Exhibit 97, which is the Dreher patent.

19 THE COURT: Which exhibit did you say?

20 MR.JANICKE: 97, your Honor.

21 Q Are you familiar with the Dreher patent, Mr. --

22 A Yes, I am.

23 Q Can you describe what the structure is that
24 is shown there?

25 A The Fig. 1 shows an ear insert to which are

1 attached two things. One, a tube, long tube, 21, which
2 carries down to the mouth position and there is a little
3 reflector called 23 terminating it.
4

5 Q How many transducers are there in this headset?

6 A There is only one transducer and the number of
7 it, I believe the reference figure is 15, which terminates
8 the insert at the -- well, terminates the insert at another
9 point. It terminates the insert at this cavity which is
10 formed by the ear insert.

11 Q It appears that part of the transducer is 15.
12 Is that piece 16 sticking out also part of the transducer?

13 A I don't know what -- it looks like part of the
14 transducer.

15 Q Does this headset permit you to both transmit and
16 receive?

17 A Yes, it does.

18 Q How do you do that with a single transducer?

19 A Well, not very well, but you do it. Evidently
20 he has done it.

21 THE COURT: Oh, no. There are a lot of
22 communication systems that use a single dynamic microphone
23 as a headset. Isn't that true?

24 THE WITNESS: Not with design internally. You
25 can use a dynamic transducer say as a microphone, but if you

1 zb-6

Romanow-direct

2 use it as a receiver the characteristic of that dynamic
3 microphone are different. Let me illustrate. For instance,
4 if you had a microphone that is designed for broadcast
5 system as an example, you would make -- the resonance
6 frequency of this diaphragm would be placed at a very low
7 frequency. Maybe six or 700 -- oh, 500 cycles or
8 so on. If it were designed for a receiver, then its
9 characteristic, the resonance frequency would be placed at
10 a different point. So although the principle can be used,
11 the construction internally would be different.

12 Q When the Dreher device is used as a microphone and
13 you are going to transmit with the headset, what is the
14 sound path and can you tell us what happens in that cavity
15 16?

16 A The sound would enter and be caught, say, in that
17 mouthpiece 23. Then the sound would travel -- enter the
18 tube at 22, would go along the tube 21 and would get into the
19 little cavity that is shown in there.

20 Q That is 18?

21 A 18.

22 Q Then what happens?

23 A Now I think before this sound -- we can talk
24 about going into the microphone, the way this is used here as
25 a microphone, we must remember that at 19 there is another

1 zb-7 Romanow-direct

2 cavity which is formed by the ear canal and the membrane --
3 and the ear membrane, so the pressure that is generated,
4 then, at this particular point entrance would be shunted --
5 the pressure that would be generated there, with which you
6 would like to move the diaphragm of the receiver would be
7 shunted by these two cavities, the cavity 18 plus another
8 cavity not shown, which is the ear canal. So that this would
9 be considered to be a faulty design, inappropriate for proper
10 speech transmission.

11 Q Again, because of that stiffness problem?

12 A Because of the pressure release problem at that
13 point.

14 Q Tell us, if you will, how this device works in
15 the receive mode with particular attention to what he
16 calls the pipe-like extension 11.

17 A Oh, yes. Well, if you want to generate -- now
18 this device being used as a receiver, electrical impulses
19 come through the cor 24 and the diaphragm begins to move.
20 So what you are generating a pressure in 18, and this is
21 quite standard in the hearing aid art. You generate a
22 pressure in this cavity and then in turn, you generate a
23 pressure in the cavity that is in front of the membrane, so
24 you move that membrane. However, now you have a release
25 mechanism that works inward in the sense of the tube now

1 zb-8

Romanow-direct

2 acts as a pressure release mechanism.

3 Q The tube 21?

4 A The tube 21 and depending upon the size of the
5 tube, this pressure release mechanism can be quite large so
6 you do not generate the pressure that you would like to
7 have.

8 Q Is the pipe-like extension 11
9 an acoustic tube?

10 A Yes, it would classify -- oh, 11, no. In my
11 opinion that would be so short, I think of these things, then,
12 as cavities, not tubes. They don't exhibit the typical
13 tube characteristics as we talked about before.

14 Q Why isn't pipe-like extension 11 an acoustic tube?

15 A It is just too short. We saw before in order
16 to have the tube characteristics, it has to have some length
17 it and we determined from this chart that Beranek had around
18 1.5 inches was a good figure. It could be a little longer
19 than that and still be all right, but certainly when it is
20 shorter than 1.5, it is an orifice, it is a cavity, it is a
21 port.

22 Q Are those the terms used by people in your
23 group at Bell Labs?

24 A Oh, yes.

25 Q How about the No. 21 in Dreher, is that an acoustic

1 tube?

2
3 A Yes, it would be a tube.

4 Q Do you know how it is that the Dreher patent
5 discloses the speech to be generated? Is it down at the
6 mouth that the speech signal comes from?

7 A It talks about transmitting some of the speech
8 through the cavities and ear membrane and also talks about
9 some of it being transmitted through the tube itself.

10 Q I am speaking now --

11 THE COURT: I don't know what you are talking about
12 now.

13 THE WITNESS: Okay. If you have a cavity
14 and you generate something internally in your mouth, some
15 tube -- there is a eustachian tube that leads back to the
16 ear membrane, makes it move and some of it gets in.

17 THE COURT: The patent talks about that?

18 THE WITNESS: Yes.

19 THE COURT: Wouldn't that tend to offset that
20 loading effect caused by the fact that the cavity in front of
21 the transducer diaphragm is shunted by that insert 11 that
22 goes into the ear, plus the cavity in the ear?

23 THE WITNESS: The speech is so little developed
24 at that point that the transmission, although one talks
25 about it, it is an ineffective transmission.

THE WITNESS: If you put it in by itself, but after all the attachments are made, then it wouldn't be.

SOUTHERN DISTRICT COURT REPORTERS U.S. COURTHOUSE
NEW YORK, N. Y. 10035

THE COURT: All right. That is what I thought. In other words, the problem is not with the transducer per se, but with the fact that you have got the cavity enlarged by two inlets?

THE WITNESS: Exactly.

THE COURT: All right.

BY MR. JANICKE:

Q Would you refer now, please, to Exhibit 34, the Martin patent.

A Yes.

Q Are you familiar with the Martin patent, Mr. Romanow?

A Yes, I am.

Q Would you describe for us briefly what is disclosed there?

A It is a combination of a platform type receiver, an earpiece with an internal arrangement internal to the earpiece which projects into the adjacent portion of the ear canal, not directly into it, but it sort of terminates in the ear canal.

Q That insert members is that tubular section 19?

A Yes.

Q And what is disclosed as the purpose of putting that in the ear cap?

1 A As I recall, the purpose is to get rid of all
2 noise, to make a very good closure so that the surrounding
3 noise will not enter by leakage into the ear itself.

4 Q Is that tubular member 19 an acoustic tube in your
5 terminology?

6 A No, because it would be too short for it.

7 Q Would you refer now, please, to Exhibit 38, the
8 Guttner patent?

9 A Yes.

10 Q Would you say what is disclosed there?

11 A I beg your pardon?

12 Q Would you tell us what is disclosed in the Guttne
13 patent?

14 A It is a hearing aid which is placed be hind the
15 ear.

16 Q Is that so-called post-auricle?

17 A It would be a post-auricle hearing aid.

18 Q How is sound conveyed to the microphone and the
19 receiver in that hearing aid?

20 A The microphone is shown on Fig. 2 as, I think
21 it is, 26 or so, but there is a conduit, a small orifice,
22 labeled 28 that goes to the microphone. Then there is a
23 receiver located further down, and I see number 16 pointing
24 to it.
25

1 gwb-3

Romanow-direct

2 Q What was the inlet passage to the microphone?
3 Maybe we should refer to Fig. 4. It is a little clearer.

4 THE COURT: The specifics says that the microphone
5 is No. 24 and the sound inlet line is No. 26.

6 THE WITNESS: There is a crosshatched line going
7 to the microphone.

8 THE COURT: That is No. 28, which is the sound
9 exit line.

10 THE WITNESS: So it is 26 that goes to the micro-
11 phone.

12 Q Would you look at the embodiment of Fig. 4,
13 please.

14 A Yes, I am seeing Fig. 4.

15 Q Is there an acoustic tube in that embodiment?

16 A Yes, the acoustic tube emerges in this case from
17 the receiver structure and is labeled 34 and goes along
18 quite a distance and then it is terminated by a nipple labeled
19 37 that goes into your ear.

20 Q That patent issued in 1965, Were you aware any
21 time prior to that of post-auricle hearing aids that employed
22 an acoustic tube?

23 A Yes.

24 Q About how long would you say were you aware of
25 such devices?

gwb-4

Romanow-direct

A Oh, there were quite a few devices for several years before that.

THE COURT: That is one that has two acoustic tubes, one for the microphone and another for earphone, isn't that correct?

THE WITNESS: Well, for the earphone I would characterize that as an acoustic tube. The other one would be more like an orifice because it is so small in extent, so short.

THE COURT: The specification refers to it as an acoustic passageway or sound inlet line terminating in a tubular part which projects from the housing.

THE WITNESS: Geometrically you would call it a tube, but from the point of view of an acoustician, you would refer to it as an orifice because it doesn't have the characteristic behavior of a tube.

THE COURT: The aspect ratio looks like it is at least 10:1, that is, it is at least ten times as long as it is across.

THE WITNESS: I am referring to the length of it.

THE COURT: I am, too. I am looking at 26, Fig. 2.

THE WITNESS: My figure is so poor that I cannot

THE COURT: Look at mine.

THE WITNESS: Well, this is very short. It

1 wouldn't be 1.5 inches. This would be the criterion for
2 the length of it. It would have to be considerably longer
3 to act like a tube.
4

5 THE COURT: In other words, your dividing line
6 between tubes and non-tubes is 1.5 inches?

7 THE WITNESS: Of that order, yes, because any
8 tubular structure that has less than 1.5 inches in length
9 doesn't exhibit the properties of a tube because it doesn't
10 have these resonances.

11 THE COURT: I thought you wanted to eliminate
12 the resonances?

13 THE WITNESS: I do get the resonances and I have
14 to take account of it when I make a headset.
15
16
17
18
19
20
21
22
23
24
25

1 3b pm qwirf 1 Romanow-direct

2 THE COURT: If you have one of these passageways that has no
3 resonance, if it is long enough you still call it a tube,
4 don't you?

5 THE WITNESS: If it is long enough, yes. If it is
6 long enough.

7 THE COURT: That is more than 1.5 inches?

8 THE WITNESS: Then it would be a tube. Less than
9 1.5 inches I think of it as an orifice. It doesn't have
10 the same properties that a tube has.

11 THE COURT: In terms of differences in properties,
12 what is the difference in properties between one of these
13 conduits that is 1.25 inches and one that is
14 in length?

15 THE WITNESS: 1.25 and 1.75 inches. There wouldn't
16 be too much difference between that, but if you made it,
17 say -- well, if you had 1.75 inches the first resonance
18 that we saw in Beranek in here -- may I go and point it out?

19 THE COURT: Yes. I can see it.

20 THE WITNESS: The first resonance occurred at
21 1300 and you begin to get into transmission range at
22 3000 cycles, you see, and you would have to take account of
23 it.

24 THE COURT: I don't believe quite so, would you?
25 That's 4.5 inches and it hits resonance at, I believe

you said, 1300 cycles.

THE WITNESS: Right.

THE COURT: At 3000 cycles you wouldn't hit resonance at 1.75 inches or, if you will, I will take my example at 1.70 inches.

What I am getting at is, you don't fall off the table when you pass 1.5 inches.

THE WITNESS: No, you don't.

Q Would you describe again how we got the 1.5 figure having to do with the standing wave properties?

A I spoke and I had reference to as a sort of a first order magnitude for a tube, for having tube properties, if something was shorter than 1.5 inches it wouldn't have the tube properties because we noticed that the tube properties occur for 4.5 inches around 1300 cycles. If I wanted to push out the first resonance to be beyond 3000 cycles, which is the important frequency range in telephony, I would have said that something which was a third in length would push out these important properties beyond the 3000 cycles.

Q So if you shorten it by two-thirds then you move the first resonance out of range?

A Right.

Q How does that relate to the wave length, the

standing wave theory, of a tube?

A It follows the standing waves in open tube quite closely.

In other words, you have the first resonance and that's related to the length, and then you get the further resonance as multiples, half wave lengths, as was mentioned before.

Q Would you refer now, please, to Exhibit 45, the Kelly patent.

THE COURT: Let me ask you this, Mr. Romanow: What is the length of the voice tube in the plaintiff's Star-Set?

THE WITNESS: It is of the order of seven and a half

THE COURT: Seven and a half inches?

THE WITNESS: Yes.

THE COURT: So that at this frequency range up to 3000 cycles you have several?

THE WITNESS: Several of them appearing, and they would have to be accounted for in design.

THE COURT: How are they accounted for, if you know?

THE WITNESS: Well, first of all, what you do is you change the area suitable. This is a .025 inches. You change the area in order not to get this large loss,

1 and I notice that the plaintiff has put the first
2 resonance in a way to enhance the low frequency response;
3 in other words, he very cleverly took care of giving a
4 little boost at low frequencies where the hearing aid
5 microphone was deficient because it had a rising characteris-
6 tic. So he put a little bump in there which lifted the
7 low end and then as long as the tube was not too small
8 in area and didn't have this large loss, the rising
9 characteristic of the microphone was taken care of by the
10 dropping off in the tube itself and the combination of
11 the two.
12

13 THE COURT: That doesn't answer the question.
14 The question is how were these resonance peaks taken
15 care of.

16 THE WITNESS: The resonance peaks were not so large.
17 You notice in here that in the typical probe tube the
18 resonance peaks were not too large, and the reason for
19 this is that the spacing between the end of the probe tube
20 and the diaphragm was very small indeed. So when you have
21 that very small spacing, you find that these resonances are
22 not too high.

23 In other words, it is something you can live with.

24 THE COURT: That's what I thought.

25 What was thought to be a problem wasn't so much

2 a problem after all.

3 THE WITNESS: No. There is another factor in
4 here, very subtle. When you put this into your ear, these
5 resonances, the person isn't that much aware of the
6 resonance.

7 BY MR. JANICKE:

8 Q Does that first resonance have no affect or does
9 it have beneficial or detrimental affect?

10 A It actually has a beneficial affect.

11 Q Would you explain again how it benefits in a
12 headset?

13 A This tube or the one used by Larkin, which was larger
14 than this tube, in combination with the microphone used,
15 which had a dropping off characteristic in here, it aug-
16 mented the falling off of the microphone at the low
17 frequency.

18 Q In here where the microphone fell off is the low
19 end?

20 A Right, below 1000 cycles.

21 THE COURT: But the resonance peaks above 1000
22 cycles would exacerbate the problem of frequency response
23 in the microphone, would they not?

24 THE WITNESS: We thought it would in our thinking
25 about probe tubes. We felt that way about it. It turned

out it wasn't that way. That is the reason we didn't have much to do with this probe tube.

Q Would you refer now to Exhibit 45, the Kelly patent?

A Yes.

Q I note that the Kelly patent is assigned to Bell Telephone Laboratories and issued in 1934.

Do you know Mr. Kelly?

A Yes, I do.

Q Did you work with him at the laboratory?

A I knew him very well and worked with him.

Q Does the hearing aid device described in the Kelly patent employ an acoustic tube?

A Yes, as shown in Fig. 2.

Q And that's from the receiver to the ear?

A Yes.

2 Q Would you refer now, please, to Exhibit 39, the
3 Erickson patent?

4 A Yes.

5 Q Does the Erickson hearing aid employ an acoustic
6 tube?

7 A Yes.

8 Q Where is that?

9 A It has an acoustic tube in connection with the
10 receiver.

11 Q The tube is 13?

12 A Yes.

13 Q Hearing aids are not addressed to the problem of
14 the wearer's speech being transmitted, right?

15 A Right.

16 Q And headsets where you want to communicate both
17 ways are addressed to that problem?

18 A Yes, that is correct.

19 Q Well, is there anything of value to the headset
20 designer in looking at hearing aids. Of what assistance
21 are heading aids?

22 A Well, at the time we didn't think it was much help
23 to the designer because it addressed itself to other
24 problems.

25 Q They must have some common ground, don't they?

For example, components, do you use the same types of components in hearing aids as in headsets?

A Well, we didn't and there is good reason for it. Our devices had to be much more rugged.

Q Hearing aid devices were considered too fragile?

A On a whole were considered to be too fragile.

Q What are the problems of stability, if any, that you encounter in the headset that you don't encounter in a hearing aid?

A Well, they are both problems. You have stability problems. The only thing is that if you have a headset and it is of utter importance to pick up the sound at the position at your mouth, you add to your, greatly to your stability problem and -- to the stability problem and comfort problem and all that sort of thing.

Q How do you add to the stability problem when you must have the voice pick up exactly positioned?

A Well, if one chooses to have, as was done by Hutchings later, to have a tube running over -- or by Larkin -- the tube to your mouth, the center of gravity moves downward. As head motions occur, the moment of inertia begins to play a part so the stability problem is much more enhanced as to what it was before.

Q Do you mean enhanced or worsened?

2 A It is worsened. It is worse.

3 THE COURT: Well, also the hearing aid is entirely
4 self-contained. You don't have to have a cord going off
5 some place and that creates another stability problem, I
6 should think, with a headset.

7 THE WITNESS: Right. Indeed it does.

8 MR. JANICKE: I am about to go into a
9 final area of these references, your Honor. I note it is
10 time for the afternoon recess.

11 THE COURT: All right, we will take a ten minute
12 break.

13 (Recess.)

14 Q Mr. Romanow, I would now like you to refer to a
15 Roanwell memorandum, which is Exhibit 21. An agreed
16 finding, 6.1 in this case reads as follows:

17 "After an evaluation of the Larkin headset, both
18 Roanwell's president and vice-president --"

19 THE COURT: You have me mixed up. Is it Exhibit
20 21 you are reading from?

21 MR. JANICKE: I was going to give you the agreed
22 statement of what that exhibit is and I'm not reading from
23 it as yet.

24 THE COURT: All right.

25 Q The finding is that after evaluating the Larkin

1 1zrf 4

Romanow-direct

113

2 headset, Roanwell's president and vice-president, each with
3 many years' experience in the headset field, concluded, and
4 what they concluded is what is recited here in the memo,
5 and what I would like to ask you about is the passage in
6 Exhibit 21 wherein Mr. Powers says, "We both," he and the
7 president, "feel that this may be the basis,"
8 this being the Larkin Plantronics headset, "basis of a
9 new generation of headsets or headset microphones."

10 That is dated December 7, 1962.

11 In your experience did the Larkin headset
12 become the basis of a new generation of headsets?

13 A . Indeed it did.
14
15
16
17
18
19
20
21
22
23
24
25

1
2 Q In what sense was that?

3 A Well, it stimulated the use of small miniature
4 components that had been looked upon as being not as sturdy
5 and so, but it was just felt from now on one could use
6 them and it would be quite acceptable. Then the comfort
7 achieved demonstrated that the additional cost of an amplifier
8 because of the small miniature components was well worthwhile.
9 The comfort was so great that the tradeoff was such that
10 one was willing to pay for the additional amplifier.

11 It demonstrated also that good voice transmission
12 was achievable, which had been in question before that.

13 Q Good voice transmission?

14 A Over the telephone frequency range.

15 It also led to the development of numerous
16 miniature headsets with acoustical tubes. It also set a new
17 comparison standard for judging the comfort and the wear-
18 ability of headsets.

19 Before that one just -- the 52 headset was a good
20 one, but once the Larkin came in, there was a new standard
21 by which to judge new efforts.

22 Q I would like you to look now to Exhibit 1, the
23 Larkin patent in suit, and if you would look to Claim 1 of
24 the patent, which is at the back of the specification. Do
25 you have Claim

zb-2

Romanow-direct

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25

A Yes.

Q You will see the phrase from Claim 1 "Support means for detachably supporting the miniature microphone and the miniature receiver adjacent to the wearer's ear," is that correct?

A Yes.

Q Does the Larkin specification anywhere tell you what the support means for the trasducer is?

A Yes, it does. If you look at Column 2, Line 5, it talks about the small fitting to which may be made of metal or plastic material is provided for the purpose of supporting a microphone and telephone receiver.

Q 10 is the housing shown in Fig. 2 of the patent?

A The housing shown in Fig. -- yes, right here. I is shown in Fig. 4 too.

Q How is that housing 10 attached to the eyeglass frame as shown in the patent, how is it described in the patent as being attached?

A It has a small fitting attached to the housing which permits support to the eyeglass frame.

Q Now I would like you to look at the Roanwell R70 headset, Exhibit 4 --

THE COURT: Are you telling me, Mr. Romanow, that the housing 10 is the support means?

1 zb-3

Romanow-direct

2 THE WITNESS: Yes.

3 THE COURT: Well, if you read the next sentence,
4 it says "Spring clip, 12, such as shown in Figs. 5, 6
5 and 7 is provided for this purpose."

6 What purpose is referred to in that sentence?

7 THE WITNESS: It refers to support, the unit as
8 a whole --

9 THE COURT: If you read the preceding sentence,
10 it says, "Is provided for the purpose of supporting the
11 microphone and telephone receiver or other sound translating
12 apparatus or transducers on the temple bar 11 of the eyeglass
13 frame worn by the operator or pilot."

14 Reading those two sentences together it seems
15 to me there is a little ambiguity as to whether the support
16 means is the so-called fitting 10, which is the housing,
17 or is the spring clip device 12, or both.

18 THE WITNESS: I think it is both.

19 THE COURT: All right.

20 Q So the housing 10 holds the transducers and the
21 clip holds the housing 10 onto the eyeglass frame?

22 THE COURT: Excuse me. I realize that there is
23 an unwritten law that counsel in patent cases never object
24 to any questions. If that unwritten law weren't in
25 existence we would have had 1000 objections up to now,

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25

zb-4

Romanow-direct

117

all of which would have been sustained, but this question is leading by any standard, and I am going to object to it.

MR. BRADLEY: I was troubled by it, your Honor.

Q Mr. Romanow, I show you the Trial Exhibit 4, the Roanwell H70 headset, and ask you what portion of that headset holds the microphone and receiver?

A The body of this as shown in here holds the body -- whatever it is.

This holds receiver and a receiver at this position and transmitter in this position.

d 4B

App. 294

2 Q What is it that holds the unit on the ear?

3 A This projection in here, including this little
4 prong and also, of course, the curvature in here, the totalit
5 of these things. What holds it is this portion that I am
6 putting my finger on here, the projection from the house,
7 including this little prong.

8 Q I show you now Exhibit 5, Roanwell R71 headset.
9 I have the same question there. What is it that holds the
10 transducers and what holds it on the ear?

11 A This body again holds the two transducers, the
12 receiver in this position and the transmitter in this position
13 below. It is held on the ear by this rigid extension of
14 the tube which extends from the upper portion and envelops
15 the upper portion of your ear.

16 Q Did you participate in some way in the years
17 after the Larkin headset was introduced in the design and
18 development of the Bell Lab Model 61?

19 A Yes, I did.

20 Q Describe what your role in that program was.

21 A I couldn't hear that very well.

22 Q Would you describe what your role in that
23 61 program was.

24 A Well, I supervised the effort of several people
25 who were involved in the design of the 61, Western Electric

1 gwb-2

Romanow-direct

2 61, headset.

3 Q How did you go about that project in exercising
4 supervision?

5 A I had many conference meetings with my engineers
6 and in many instances I would go and look over their shoulder
7 and see how the work was coming.

8 Q Can you identify the people, some of the people,
9 who worked on that project?

10 A Yes. There was a Mr. Bryant, who had many years
11 of experience, and there was a Mr. Hazel involved, there was
12 also Mr. Prescott involved, there was Mr. Mosing involved.

13 Q Were these people members of technical staff?

14 A They were all members of the technical staff
15 except Mr. Hazel. Mr. Hazel was a technical assistant.

16 Q About how many years experience did Mr. Bryant have?

17 A Mr. Bryant, around 35, more than 35 years of ex-
18 perience.

19 Q And Mr. Prescott and Mr. Hazel?

20 A Mr. Hazel had about 15 years of experience of
21 a technical assistant nature. Mr. Prescott had about 30
22 years, a little more than 30 years, experience.

23 Q I refer you to an article in Bell Laboratories
24 Record which is Exhibit 68.

25 A Exhibit 58?

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25

Q 68.

A I beg your pardon. Yes.

Q Do you know Mr. Peterson who wrote the article?

A Yes, I do.

Q The article makes reference to the fact that Bell Laboratories investigation had started 1963, according to the second page of the article, for various possible lightweight designs.

Was that investigation involving you in any way?

A Yes.

Q Would you tell us what the objects of the investigation were?

A It was to develop a new headset of miniature-type having a comfort and stability that we hoped to outdo Larkin if we could.

Q What was the intended final use of the headset after it had been designed?

A To be used primarily by telephone operators.

Q And were any specific parameters given to the designers as to what features the headset should or should have,-- were they left to investigate on their own?

A No, there was a direction given which involved, among other things, the use of a voice tube and also miniature components and an amplifier.

gwb-4

Romanow-direct

121

Q Those paramaters were directives given to the group?

A Yes.

Q What course did the investigation take?

A Well, we made four different models which we felt had good success possibilities.

Q Can you identify in some way what those models were?

A I think there is an exhibit -- I don't recall the number -- that shows these models.

Q Exhibit 69?

A Oh, yes.

Q Are they the models you are referring to?

A Yes.

End 5A

1 5b pm gwrf 1

Romanow-direct

2 Q How did these four models come about?

3 A Well, what we were trying to do is have something
4 that would be lighter, more comfortable and would have good
5 voice transmission and would hopefully be better than what
6 Larkin developed.

7 Q I see these four are labeled Models A, B, C and D.
8 Would you describe Model A for us?

9 A Yes. Model A is conventional as far as the tele-
10 phone receiver is concerned. It has, though, on the lower
11 side a projection of a tube which leads to the mouth of
12 the individual. This is Model A.

13 THE COURT: Where did you say they are referred
14 to as A, B, C and D?

15 MR. JANICKE: In Exhibit 69.

16 THE COURT: All right.

17 THE WITNESS: You want me to state this again?

18 Model A was a conventional receiver with a
19 headband. Then there was a small microphone transducer
20 at the lower portion and then there is a projection that
21 goes to the corner of the mouth which is a tube. That
22 was Model A.

23 Model B had a receiver and transmitter portion
24 on one side, it had a tube coming out from the transmitter
25 which again went to the corner of the mouth, there was

1 gwrf 2 Romanow-direct

2 a soft ear plug which went not too far into the ear canal
3 but just projected somewhat inside the ear canal, and there
4 was a headband.

5 1.. Model C, there was a support body again, but
6 this support body -- it had now two tubes. One was
7 a receiver tube and one was a voice tube. It was supported
8 adjacent to the ear. The ear tube could be taken and been
9 passed into the ear canal while the voice tube then could be
10 adjusted to be at the corner of the mouth as before.

11 It used a small headband.

12 Model D now was built on an ear insert type, in
13 other words, both receiver and transmitt were attached
14 to -- the body which supported it was attached to the
15 ear insert and could be placed into the ear and it was devoid
16 of any support means, that is, no headband.

17 There was no tube. There was just the ear insert
18 which would go and form a cavity with the ear but there
19 was no tube but there was a voice tube.

20 Q Is there any relationship between that Model D
21 that you have described and the next exhibit, Exhibit 70,
22 which is the Bryant patent?

23 A Yes. That in almost all details became the
24 Bryant patent.

25 THE COURT: D?

1 gwrf 3

Romanow-direct

2 THE WITNESS: Yes, the D became the Bryant patent.

3 THE COURT: And that became the Model Y-1?

4 THE WITNESS: 61.

5 THE COURT: 61?

6 THE WITNESS: Yes.

7 Q Going back for a moment to Exhibit 69, of the four
8 models, A, B, C, D, shown there, is any of them a post-
9 auricle headset?

10 A None of them are.

11 Q Did your group consider a post-auricle headset?

12 A In a very transitory way. We considered it and
13 made a little lucite model which was very rudimentary
14 but the outlook for stability was so poor in our own estima-
15 tion that we just abandoned it.

16 Q What became of the Model 61? Was it commercially
17 introduced?

18 A It was introduced but it had problems.

19 Q Would you describe them?

20 A The problems were that operators have an
21 antipathy for inserting anything into their ear in supporting
22 something from an ear insert. They just didn't like it.
23 Although at first they were enthusiastic about it, but as
24 time went on problems arose. One of the problems arose
25 that the ear insert had to be fitted or had to be fitted

1 gwrif 4 Romanow-direct

2 to the ear although there were casts made from the ear
3 and the ear insert ought to have been good, but in practice
4 it turned out that there were pressure points developed and
5 they didn't fit as well as they should. So that was a
6 problem.

7 In different areas, people who supplied the
8 ear insert were not as skilled as in other areas, and that
9 turned out to be a problem.

10 The operators would leave and after you made
11 an ear insert the ear insert was valueless. That turned
12 out to be a problem.

13 So that on the whole it was accepted and considered
14 to be a good device but yet it wasn't accepted because
15 of all the practical problems.

16 Q Are you familiar with the Plantronics MS-43
17 post-auricle headset? You will find a picture of it shown
18 in Exhibit 66.

19 A Yes, I am.
20
21
22
23
24
25

T6A PM

1z 1

Romanow - direct

2 Q You have seen this photograph before?

3 A Yes.

4 Q The voice tube here -- is there a voice tube in
5 the headset?

6 A Yes. There is a voice tube and it emerges from
7 the bottom of this device. The bottom, as you support it
8 behind the ear, comes down on the bottom.

9 Q Will you turn now to the next exhibit --
10 excuse me, before that, have you ever seen the MS-43 type
11 headset in the market?

12 A No, I have not.

13 Q The next exhibit, No. 67, is Flygstad patent.

14 A Yes.

15 Q Are you familiar with that?

16 A Yes.

17 Q Can you describe the structure for us?

18 A The microphone and the receiver are mounted on
19 a body which is placed behind the ear. There is an ear
20 tube and a nipple that is placed into the ear which comes
21 out from the top of the device and there is a voice tube
22 which comes from the bottom of the device.

23 Q This patent is assigned to Telex. Have you
24 ever seen on the market a device corresponding to that
25 patent structure?

1 lz 2

Romanow - direct

2 A I never have.

3 Q You have testified with respect to the Plan-
4 tronics MS-43, Exhibit 66, and Flygstad, Exhibit 67, that
5 the voice tube projected from the bottom of the housing. Was
6 there any design basis or criterion for doing it that way
7 prior to 1969?

8 A Well, I think when you took the tube out from
9 the bottom, you just hoped to avoid all the problems that
10 you might get with the tube. The general feeling was, is
11 to make as short a tube as possible.

12 Q Does Flygstad's patent in any place give a
13 reason for why he places the tube there?

14 A I think he does. Let me look.

15 I notice in Column 3, Line 21, it says "Tube member
16 12 extends forwardly into engagement with the cheek of the
17 operator or along the area indicated by reference numeral
18 60 and the megaphone 13 is positioned in proximity to the
19 mouth of the operator in a position which will provide for
20 the most efficient transfer of intelligible sound energy
21 from the particular operator using our apparatus."

22 I interpret that as being the shortest position to get
23 to the corner of the mouth, the shortest length.

24 THE COURT: You do?

25 THE WITNESS: Yes.

1 lz 3

Romanow - direct

2 THE COURT: I don't. I interpret that as saying
3 that the megaphone 13 ought to be positioned in proximity
4 to the mouth of the operator in a position which will
5 provide for the most efficient transfer of intelligible sound
6 energy from the particular operator. That means to getting
7 the megaphone close to his mouth, doesn't it?

8 THE WITNESS: A megaphone does not do anything for
9 speech. It is so small that --

10 THE COURT: No, no. I am talking about the location
11 of it. I don't see anything in that sentence that suggests
12 that the tube ought to be short. What I see is that the
13 sound receiving orifice at the end of the tube ought to be
14 near the mouth.

15 If you see anything in there that suggests the tube
16 ought to be short, I'd appreciate your directing my atten-
17 tion to it.

18 THE WITNESS: I think the implication of, at least as
19 I read it and I looked at the drawing, was such that it
20 connoted to me at least that the intent was to get it to
21 the corner position in the most direct way possible. You
22 see, it says "Tube member 12 extends forwardly into engage-
23 ment with the cheek of the operator along the area indicated
24 by reference numeral 60." When you looked at this whole
25 thing, it indicated to me at least that he wanted to get it

1 lz 4 Romanow - direct

2 there as fast as you possibly could.

3 Q Was there any basis that you know of that would
4 have supported at this time -- filed in 1963 -- a reason
5 for taking the shortest path?

6 A Well, people always talked and thought about the
7 losses that occurred in the tube. I don't think that many
8 designers were as intimately knowledgeable about the
9 combination of the microphone and the tube. When people
10 thought about a tube and microphone combination, I think the
11 length of the tube, the resonances and that sort of thing
12 always entered their mind and they had in mind, for instance,
13 attenuation losses that occurred in the tube -- in tubes,
14 so there was always the -- people always strived for
15 having -- if you had to have a tube, let's have the shortest
16 possible tube.

17 Q How is attenuation a function of length?

18 THE COURT: He has already explained that.

19 Q In the properties of tubes as set forth in Beranek
20 For Sound Propagation, does he give any discussion of
21 attenuation in a tube?

22 A Yes, I noticed that on Page 72 of Beranek, there
23 is a formula given for the attenuation constant in circular
24 tubes. This attenuation constant relates to the diameter of
25 the tube; it relates to the frequency; but more importantly,

2 relates to the length of the tube and it is given -- the
3 attenuation constant is given in terms per unit of length,
4 so in order to get the total attenuation in a tube you have
5 to multiply by the length of the tube.

6 THE COURT: Well, you got it in, counsel. He had
7 already explained it. Attenuation is proportional to
8 length, but so be it.

9 Q As far as you know, Mr. Romanow, which was the
10 first post-auricle headset to have the microphone and
11 voice tube at the top of the housing?

12 A The Hutchings StarSet was the first one to have
13 the microphone on top and the voice tube emerging from the
14 top leading to the mouth.

15 Q Are you aware of any hearing aid references
16 prior to Hutchings which had microphones at the top?

17 A Yes.

18 THE COURT: What do you understand to be the advantage
19 of having the voice tube on the top? Strictly for balance?

20 THE WITNESS: Balance would be one of the advantages.
21 Also, the other advantage that all the internal parts of the
22 body which acts as a support for everything, the mounting,
23 you find that the whole body can be made smaller and move
24 up on your auricle. In so doing, what you can do is you
25 find that the auricle at this point is a little stiffer than

1
2 it is down there, so you find that the whole thing moves
3 upward and it is just more securely mounted.

4 Q Perhaps you can illustrate with the Roanwell
5 R-70 and 71.

6 A We superimpose these, you see. The auricle
7 would be placed in here, like this. If you begin to look
8 at this in here, you find that this -- there is a length, you
9 notice all this body in here, it has to extend further
10 down. As it extends further down in here, the cord
11 pulling in here, the moment of inertia of these parts,
12 the larger proposition, it gets into a position of your
13 ear which is more flexible and therefore, it is just not as
14 securely mounted.

15 THE COURT: But the support is really on top
16 of the ear in both instances, isn't it?

17 THE WITNESS: It is supported in both instances but
18 there is more of a projection in here. You know the body
19 projects beyond this and it gets into a position -- here.
20 It gets into a position where the ear is simply not as likely--
21 it just doesn't restrain it to the same extent.

22 THE COURT: I'm not sure I follow you. I should
23 think that in both cases, neglecting for the moment the
24 torque imposed by the cord --

25 THE WITNESS: Should we mount it?

1 lzrf

Romanow-direct

132

2 THE COURT: The weight of the thing is going
3 to be imposed in a downward direction, so the basic support
4 has got to be on top of the ear. You can't support the
5 weight by attaching something to the back of the ear. It
6 has to be attached to the top of the ear. Whether or not
7 the bulk is around in back or whether the bulk is on
8 the top, in both cases you are going to be supporting it
9 at the top of the ear, are you not?

10 THE WITNESS: Well, the additional factors
11 which maybe I have to demonstrate to you.
12
13
14
15
16
17
18
19
20
21
22
23
24
25

133

Tk 6B

1

zb-1

Romanow-direct

2

THE COURT: All right.

3

THE WITNESS: Is this. That in this -- in the

4

Hutchings model in here, this now is mounted on your ear in

5

this fashion. What you do, you additionally get the nipple

6

to mount into the ear channel or ear canal which goes upward

7

and forward, so now when this thing -- when the headset is

8

mounted in this way, there is a push, it begins to push back

9

also.

10

In other words, it gives you an additional support.

11

THE COURT: You mean because of the stiffness

12

of the tube?

13

THE WITNESS: Yes, because of the stiffness of the

14

tube. When you begin to move your head, you see, you can

15

do like this and the tube remains in a very good position

16

in here.

17

With the other device, let me try the other one

18

in here, the situation changes somewhat. It is more difficult

19

to insert it into the ear canal because you have to come down

20

and it pushes upwards so it is a little more difficult.

21

You notice in here that the whole body -- I have

22

to get this -- that the whole body projects further down,

23

so now when you do this in here, for me-- I don't know

24

whether you see small movements in here.

25

THE COURT: I wasn't watching there.

1 zb-2 Romanow direct

2 THE WITNESS: Small movements occur in here. You
3 notice in here this will begin to move.

4 THE COURT: I can't see it. But isn't that
5 unit that you now have on supported at the top of the ear?

6 THE WITNESS: It is supported at the top of the
7 ear this way, but the movement of inertia, the parts in
8 here that I have weighed and which begin, as you move the head
9 backwards and forwards, they remain still, they resist motion.
10 There is more of it away from the point of support. So in
11 that way they are less securely mounted.

12 THE COURT: I understand now. It is important to
13 get the mass as close to the point of support as possible.

14 THE WITNESS: As possible. Exactly. Now, I have
15 an ear, I have a man's ear and of course it is used for many
16 of the operators and their ear, I find that my ear is about
17 half an inch bigger than Mrs. Clinton's ear and also less wide.
18 She may be an operator, just a typical woman.

19 THE COURT: I think she is anything but typical.
20 I know she does have small shell-like ears.

21 THE WITNESS: There the support problem is more
22 difficult.

23 Q Mr. Romanow, this morning Judge Connor asked a
24 question, we were talking about hearing aids, that some of
25 them had tubular members over the top leading to the

135

1 zb-3 Romanow-direct

2 microphone and the Judge asked why in a hearing aid would
3 you want to use a tube to the microphone.

4 Can you answer that from any of the references
5 that show top mounted mikes in hearing aids?

6 A You have to get from the receiver in some way to
7 your ear. You had to insert it and get it into the ear itself

8 THE COURT: Excuse me, before you go any further.
9 You either misunderstood his question or he misunderstood
10 my question, because you are not answering the question I
11 asked but I think I know the answer now anyway. As a matter
12 of fact, one of the patents that we have talked about here
13 showed a, what I would call a tube. He says it is too short
14 to be a tube, which extends to the microphone. If you got
15 a microphone buried inside the housing, obviously there
16 has to be some kind of inlet for pressure waves for it to
17 receive sound.

18 THE WITNESS: Yes.

19 MR. JANICKE: I have no further questions.

20 CROSS-EXAMINATION

21 BY MR. BRADLEY:

22 Q Mr. Romanow, I understand that some of the large
23 headsets you spoke about this morning were in response to
24 a survey that United Airlines ran in 1960. Do you know of
25 any reason why any of the companies that were contacted would

1 zb-4

Romanov < OSS

2 not have set up a special project to develop a lightweight
3 headset?

4 A No, I don't know of any reason why they wouldn't

5 Q Do you know the extent of the market for head-
6 sets in the airlines field in 1960, 1961?

7 A I know it wasn't too large.

8 Q One of the witnesses testified that approximately
9 500 would saturate the entire market. Would you agree with
10 that figure as an approximation?

11 A I have no knowledge of my own as to the market.

12 Q Do you have any knowledge as to how many United
13 Airlines intended to purchase in their first purchase order
14 to equipt their fleet?

15 A I have no knowledge whatsoever.

16 Q I show you Plaintiff's Exhibit MM and I direct
17 you to Tab 16 --

18 MR. JANICKE: I believe that is Defendant's
19 Exhibit.

20 MR. BRADLEY: I am sorry. Your Honor, our
21 exhibits are in the batch over there.

22 THE COURT: 16?

23 MR. BRADLEY: It is MM. The exhibit number is
24 MM, double alphabet, and it is Tab. 16.

25 THE COURT: All right.

Q You will see on the first page of this, they have

1 zb-5

Romanow-cross

2 a listing as to the number of headsets which they called
3 Minitels at the time for airplane. It says for captain
4 and flight officer positions. And they had a total of
5 214 with 55 spares, making a total of 269. And then there is
6 an asterisk, and at the end of that memorandum there is a
7 note saying the original estimate was actually 250.

8 Q I would also like to show you Defendant's Exhibit
9 D which contains an ad, dated December 1962, which shows the
10 price of the MS30 here, it was called, with a T30 amplifier
11 to be \$67. That is followed by a subsequent ad of February
12 '63, which shows the headset itself for \$35 with a quantity
13 price dropping to 30.

14 Did you see those figures?

15 A Yes.

16 Q For a purchase order of 250 units at a price of
17 thirty or \$35, do you think in your experience that would
18 warrant setting up a R & D effort to develop a lightweight
19 headset?

20 A If that had been the only market, probably not,
21 but I think there were other markets in the mind of the
22 people. This may be only a breach into the technology,
23 so I wouldn't know.

24 Q Well, directing your answer to my question as to
25 that particular market, do you feel that it would not warrant

1 zb-6 Romanow-cross

2 settting up a R & D effort to develop a new headset?

3 A I know at Bell Labs we wouldn't have done it.
4 I don't know what people outside would do.

5 Q And if someone were interested in another market,
6 such as the telephone industry, do you think it might
7 have been likely that they would develop a headset for that
8 industry directly if it had a much greater market rather than to
9 respond to United Airlines' ad which had only 250 units?

10 A I think they would.

11 Q I would like you to take a look at Defendant's
12 Exhibit C, which is a prior art book relevant to the Larkin
13 patent.

14 A What is the exhibit number?

15 Q The book itself is C.

16 A Yes.

17 Q And I direct you to Tab 2B, to the last flyer
18 in that tab.

19 A Yes.

20 Q At the bottom of that page -- I note for the record
21 first of all that the flyer is date coded at the back 2-59.

22 Do you see that?

23 A Yes. 2-59.

24 Q Now, on the first page of the flyer, at the botto
25 there is shown the telex twinset, which I believe you

1 zb-7

Romanow-cross

2 mentioned and you indicated, I believe, that that has
3 acoustical tubes to the ears, does it not?

4 A Yes.

5 Q Now, on the top of the page, it shows a boom mike
6 headset which weighs three and a half ounces, do you see that?

7 A This one in here? You are referring to this?

8 Q Yes.

9 A Yes.

10 Q Which shows the picture of an airlines officer
11 and that is made from the twinset with acoustical tubes with
12 a boom mike attached to it, is that correct?

13 A Yes.

14 Q Now, in addition to the one pound headsets that
15 United received, they also received one of these, did they
16 not? Maybe not exactly this construction, but described
17 essentially this way, isn't that correct?

18 A I don't know anything about it. I wasn't involved
19 in this kind of approach, so I don't know.

20 Q You don't know whether they received a headset
21 such as that?

22 A I am not -- not from first knowledge, I don't
23 know anything about it.

24 Q Well, if you look back at Defendant's Exhibit MM
25 for a moment --

1 zb-8 Romanow-cross

2 A Which number, please?

3 Q Exhibit MM --

4 THE COURT: Which tabe he wants to know.

5 Q It is Page 23.

6 A Yes.

7 Q You will see starting on Page 3 it mentions next
8 in your memorandum, then identifies it December 19, 1960,
9 you mentioned Telex and you state that they have offer 1
10 a sample of a new development unit estimated to be completed
11 in January '61. Did they ever give you that sample?

12 "A I believe the man did bring it in and it was
13 basically their twinset headphones which are lightweight head-
14 phones with a boom, with a pivot boom added to one side with
15 a large microphone. And it was close, but still was not
16 what we were looking for."

17 Do you see that?

18 A Yes.

End 6B

19

20

21

22

23

24

25

1 7 gwr f 1

Romanow-direct

2 Q Was that essentially talking about the boom mike
3 headset we looked at in Defendant's Exhibit C?

4 A I think it does.

5 Q I would like to refer to one other page 25.

6 A Same tab number?

7 Q Same book, yes, Defendant's Exhibit MM.

8 On line 11 the question is: "What was United's reac-
9 tion to that Telex unit when they finally delivered the
10 sample or showed you the sample?

11 "A Well, it was quite favorable in that we liked
12 it for its light weight, it was relatively rugged, and quite
13 comfortable to wear. The only real objection we had was
14 the large boom microphone that was in front of the mouth
15 of the pilot.

16 "Q What was the objection to that?

17 "A Just from a mass standpoint. It would not stay
18 there. If you placed it there for talking and moved
19 your head around to do other cockpit duties, this particular
20 one would walk away or move, it would not stay there, it
21 would reduce your output in transmissions to the ground.

22 "Q Was there any danger of injury from having
23 the boom microphone out in front of the mouth?

24 "A No, no."

25 Do you understand that to mean, Mr. Romanow, that

1 gwrf 2 Romanow-direct

2 the opportunity, when the head was moved, the mike wouldn't
3 track because the mike was at the end of the boom in front
4 of the mouth?

5 A I think that would be one of the problems.
6 The other thing that is referred to, it says here, "Just
7 from a mass standpoint it wouldn't say there. If you
8 placed it there for talking and moved your head around to
9 other cockpit duties, this particular one would walk away
10 or move. It wouldn't stay there. It would reduce your out-
11 put in transmission to the ground."

12 So in fact what they say is the boom would not
13 stay in the right position.

14 Q And that's with movement of the head?

15 A I assume that's what he says here.

16 THE COURT: Excuse me.

17 A It says from moving the head.

18 THE COURT: This unwritten law seems to be working on
19 both sides. I don't know what useful purpose is gained by showing
20 this man a deposition of another man and asking him what it
21 means to him. Is he being qualified as an expert in reading
22 the English language?

23 MR. BRADLEY: Your Honor, I have one further question
24 along these lines. The witness has spoken about the very
25 heavy headsets that were received by United and I would like

1 qwrif 3

Romanow-direct

2 to ask him about this one which was three and a half ounces
3 and I just had one other question.

4 THE COURT: I am not trying to interfere with your
5 examination, but it seems to me that I have to defensively
6 think about the length of the trial and if all you are
7 going to do is ask him what he thinks about the testimony
8 of another man or what that testimony means to him, I don't
9 believe you are really helping the Court.

10 Now, if you have some other question, go right
11 ahead and let me not interfere.

12 MR. BRADLEY: I accept that.

13 MR. JANICKE: I would like to say a word about
14 this problem we both seem to have. I think the problem
15 stems from the large 95 pages of agreed facts that we
16 have in the case. It makes it very difficult, since we are
17 not going to prove anything, to get that before you to lay
18 the predicate to ask the witnesses questions. That
19 was my difficulty in trying not to lead the witness because
20 all these facts are agreed.

21 I didn't want to take up the Court's time with it.

22 THE COURT: I wasn't thinking about merely leading
23 but other types of questions that could have been objected
24 to. I recall the first time I had a trial against a
25 general attorney out in Chicago -- the attorney on the other

1 gwrif 4

Romanow-direct

2 side incidentally was Burt Jenner, later of the Warren
3 Commission and of the Committee To Revise The Federal Rules,
4 and I would think that of the first hundred questions I asked
5 he objected to 50 of them and the objections were sustained
6 at least 95 per cent of the time. It was a different world
7 than I, as a patent attorney, had been used to.

8 People ask in patent trials questions which are
9 leading, which ask for hearsay, which ask for all kinds
10 of opinions for which the witness has not been qualified,
11 and patent attorneys are such gentlemen that they would
12 never think about objecting to the form of a question or
13 to the propriety of it.

14 No doubt it does shorten the trial in many
15 instances, so I should be the last one to complain if it
16 has that effect. But when I sense it is not shortening -
17 it but lengthening it, then I do have a position to protect
18 and I will do so.

19 Pardon me. You try the case and I will listen.

20 MR. BRADLEY: We will try to move along as fast
21 as we can.

22 THE COURT: I appreciate the work having gone
23 into preparation. I haven't seen a case yet which has
24 been as well prepared in terms of the marking of the
25 exhibits and the furnishing of the Court with copies of

1 the exhibits and so on. So I compliment you very much on
2 that.
3

4 MR. BRADLEY: Thank you, your Honor.

5 BY MR. BRADLEY:

6 Q Mr. Romanow, I have one further question along
7 those lines, and what I have done is made an extra copy of
8 one of the references in our book C which falls behind Tab 3.
9 I would like you to look at that in connection with this Telex
10 headset for the boom mike headset and I refer you particularly
11 to British Patent 716, 801 and to page 2 thereof in the
12 right-hand column.

13 We have colored this yellow. It begins at line
14 85 and it says:

15 "It is known in an operator's headset to use a
16 miniature microphone mounted on an adjustable boom secured
17 to the receiver or to the end of the head harness
18 opposite the one to which the receiver is secured."

19 Do you see that?

20 A Yes.

21 Q It further says:

22 "It is difficult with this arrangement to avoid
23 disturbing the adjustment of the boom when the head is moved
24 due to the inertia of the microphone. It is now proposed"--
25 and to give you the context of it now, this was published

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25

gwrfr 6

Romanow-direct

146

in 1954 -- "it is now proposed to fix the microphone to the head harness and extend the sound inlet by means of a flexible duct terminating in a flare opposite the mouth."

Fig. 4 shows this arrangement with a segmented duct. You might look at Fig. 4.

Mr. Romanow, in the 1950s and 1960 or 1961, if a man had the Telex boom mike in front of him with the problem we have discussed and he had this reference in front of him, wouldn't it have been perfectly obvious to replace the boom microphone with a microphone up at the head harness and an acoustical duct down to the mouth?

MR. JANICKE: Your Honor, I will object to that question since the obviousness issue in this circuit is one of law.

MR. BRADLEY: Your Honor, at least the New Federal rules certainly permit conclusory questions of opinion.

THE COURT: They haven't gone into effect yet, have they?

MR. BRADLEY: No, but I think that this will be of great assistance to the Court to get this witness' opinion on this.

1 THE COURT: The way the question is worded, I think
2 it calls for a legal conclusion. That isn't to say that a
3 question which segregated out the factual aspects of that
4 issue couldn't be framed. But when you simply ask him
5 whether it is obvious, apart from the leading nature of
6 the question I think you are asking something that is a legal
7 conclusion.
8

9 Q Mr. Romanow, can I ask you whether a man skilled
10 in the art with these two documents in front of him in 1960
11 or 1961 wouldn't have the directions necessary to make a
12 headset with acoustical ear tubes that are on it already and
13 an acoustical voice tube as in the British Patent?

14 A This is not a voice tube. This is a horn which is
15 partially exponential.

16 THE COURT: But only partial?

17 THE WITNESS: Yes, but it has some of the
18 characteristics of a horn rather than the characteristics
19 of a tube. They are two different voices.

20 Q Is a horn not a tube?

21 A A horn is not a tube because a horn changes
22 in cross-section, a tube does not change in cross-section.

23 Q Isn't a horn described in the acoustical standards
24 definitions as a tube?

25 A Not to my knowledge.

1 THE COURT: Let me ask you this: What is the
2 exhibit number of the British reference?
3

4 MR. BRADLEY: This is part of Defendant's Exhibit
5 C, your Honor. It is behind Tab 3 and I just made an
6 extra copy for convenience.

7 THE COURT: All right.

8 Q You will note that on the first page of the text
9 of the British Patent it speaks of the extensions as an
10 acoustical duct on the bottom line, 47. Is an acoustical
11 duct different than an acoustical tube?

12 A May I give you some example of a duct? When you
13 talk about acoustical ducts, you picture something that is
14 more like a duct which transports air, used for air
15 transport, it is not something like a small tube.

16 THE COURT: Like the Hudson Tubes?

17 THE WITNESS: No, but air ducts transport air,
18 for instance, for heating purposes.

19 Q Is that what an acoustical duct is?

20 A I have to think hard because it is terminology
21 that isn't usually used. You talk about ducts, you talk
22 about orifices, you talk about conduits, you talk about
23 exponential horns, and I don't quite know what an acoustical
24 duct is.

25 THE COURT: Let me ask you this, Mr. Bradley:

1 Is this British reference your best voice tube
2 art, prior art?
3

4 MR. BRADLEY: No, it isn't, your Honor.

5 THE COURT: Why don't we go to the best art?
6 He has got too easy an escape on this one. I can see that
7 it is a horn- It doesn't pose quite the same problems, as he
8 has already explained, as one of these 25 mil tubes.

9 MR. BRADLEY: I was going to call the witness'
10 attention to the dimensions of the bore through this tube
11 even though it looks large in the drawing, and I refer
12 to page 3, the left-hand column in line 23, which indicates
13 the diameter of the bore of segments at the narrowest
14 point is .187.

15 THE COURT: Where are you reading from? Did you
16 say page 3?

17 MR. BRADLEY: Page 3, yes, your Honor, the left-
18 hand column, line 23.

19 THE COURT: That isn't what I see. We must be
20 looking at different references then.

21 MR. BRADLEY: This is Patent 716,801.

22 THE COURT: All right. I see. All right. I
23 withdraw my earlier comment.

24 MR. BRADLEY: The one you are looking at is in
25 fact a horn.

2 THE COURT: So I noted. Okay. I withdraw my
3 comment.

4 Q We are on British Patent 716,801?

5 A Yes.

6 Q On page 3, left-hand column, line 23, where it
7 says diameter of bore of segments at the narrowest point is
8 .187. That's 3/16 of an inch, is that right?

9 A Yes.

10 Q Is that a relatively small voice tube?

11 A No, it wouldn't be. It would be larger than a
12 small voice tube.

13 Q Would it be a voice tube?

14 A If this tube was continuous and nothing else,
15 it would be a voice tube, if it were continuous and there was
16 no attachment.

17 Q You mean at the mouth end of it?

18 A Right.

19 Q I refer you back to Defendant's Exhibit D and in
20 the last flyer there just before the back cover it shows
21 what is called a PAC-1 acoustical coupler for background
22 noise reduction and you can see that also on the next page.
23 There is sort of a spoon-shaped coupler that attaches
24 to the end of the voice tube and this is one of plaintiff's
25 MS-50 units.

1 Would you say the inclusion of that spoon at the
2
3 end of the voice tube means that it is no longer a voice
4 tube?

5 A It still is a voice tube.

6 Q Is that also true of the British reference?

7 A No, it isn't.

8 Q Why is it not?

9 A The British patent has a large extent in here.
10 The tube or the sound pressure enters in here and travels
11 up here and gets -- and there is a change in cross-
12 section, so the pressure changes continuously as it comes
13 from here to the point of this nature. This little
14 thing that you are seeing there acts merely as a reflector,
15 it does not act like a horn because it is much too small.
16 It is a different device.

17 Q Would you say a segment of that acoustical duct
18 you are referring to in the British Patent is an acoustical
19 tube?

20 A The part from here to there would be an acoustical
21 tube.

22 Q But the attachment at the end would be an
23 exponential horn because it changes in cross-section?
24 And if you added this segment to the lightweight boom head-
25 set mike that we discussed that had the problem of the

boom swinging as indicated in this patent, would you then have a headset with an acoustical voice tube and an acoustical ear tube?

A No, because if you added this horn it would have different properties from a tube. It was vastly different.

Q I thought you indicated it was an acoustical tube down to the entry portion?

A But this is a composite, you see. You can't just take a little piece like this and add an exponential horn and say it acts like a tube. It acts like a composite. It acts as a tube and an exponential horn.

MR. BRADLEY: Your Honor, there is a lot of technical testimony and I might be able to expedite the testimony if we were going to break for today.

THE COURT: It is our normal breaking time. I take it you have a significant amount of cross examination remaining.

MR. BRADLEY: What I would like to do is get it together so I could minimize the time in court.

THE COURT: All right. We will adjourn until 10:00 o'clock tomorrow. I understand that you are going to read the summaries of the other depositions unless I do.

MR. JANICKE: That's right, your Honor.

THE COURT: That is only this volume. You have

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25

gwrf 12a

Romanow-direct

152a

already read the one. It is all that remains.

MR. JANICKE: Only a total of eight or ten pages,
that's it.

THE COURT: I will read it tonight, as I promised.
See you tomorrow at 10:00.

(Adjourned to 10:00 a.m., March 18, 1975.)

WITNESS INDEX

<u>Name</u>	<u>Direct</u>	<u>Cross</u>	<u>Redirect</u>	<u>Recross</u>
Daniel William Martin	28			
Frank Frederick Romanow	38			

EXHIBIT INDEX

<u>Exhibit</u>	<u>Identification</u>	<u>In Evidence</u>
1 through 139		37

1 la am l

154

2 Plantronics, Inc.

3 vs

4 Roanwell Corporation

5 New York, New York
6 March 18, 1975-10:00 a.m.

7 (Trial resumed)

8 THE COURT: Good morning, gentlemen. I
9 apologize for the change of venue. This courthouse is
10 undergoing some renovation and we lost three courtrooms.
11 If you saw the courtrooms, you would realize it isn't much
12 of a loss, but we are short on courtrooms so we have to
13 hop around to wherever there is an empty spot.

14 I have got here copies of the memorandum which
15 I wrote on the motion to strike the affirmative defenses.
16 There is a copy for each side there. If you will hand them
17 around.

18 MR. ARNOLD: May it please the Court, we now have
19 the stipulation with opposing counsel as to the admissibility
20 of Plaintiff's Exhibit 140 and we would ask, on the basis
21 of that stipulation, that it be admitted in evidence.

22 MR. BRADLEY: No objection.

23 THE COURT: What is it?

24 MR. ARNOLD: It is a collection of the articles
25 out of Mr. Mol's deposition, some of which are repeated

1
2 in other exhibits, probably most of them, but they
3 are collected together because of their relevance to
4 each other during the course of a certain portion of the
5 testimony.

6 THE COURT: All right, it will be received.

7 (Plaintiff's Exhibit 140 received in
8 evidence.)

9 MR. ARNOLD: Responsive to the Court's request
10 we talked to our principal last night and Mr. Clark and I
11 visited with each other. It might be more appropriate
12 for Mr. Clark to indicate what his client's position was
13 and for me --

14 THE COURT: You probably would not like to have
15 this on the record.

16 MR. ARNOLD: It doesn't matter to me.

17 MR. CLARK: I would prefer it not to be on the
18 record.

19 THE COURT: All right, it can be off the record.
20 (Discussion off the record.)

21 MR. BRADLEY: Your Honor, one other housekeeping
22 item on our motion to withdraw the stipulation as to the
23 Roanwell sales to others than Western Electric. I believe
24 you indicated yesterday that that motion would be granted.

25 THE COURT: That is correct. With the understanding

1 that because this comes pretty close on the start of the
2 trial, that if the plaintiff wants any additional discovery
3 as a result of this change of position, I will grant the
4 right to have such discovery after trial.
5

6 MR. BRADLEY: We would not oppose that, your Honor,
7 nor would we oppose a CPA coming in to check the figures.
8

9 MR. JANICKE: Before we begin, I have two mechanical
10 questions, your Honor. The first is with respect to deposi-
11 tions and how they stand in the record. I know we submitted
12 summaries and so on. Are the depositions deemed to be
13 in the record by virtue of submission of the summaries?

14 THE COURT: The depositions are not automatically
15 in the record, even though they are filed in the Clerk's
16 Office. If you want an entire deposition in evidence,
17 you should offer the deposition, making sure that the
18 transcript is in fact in the Clerk's Office. In case
19 of a dispute between parties as to whether the summary
20 is accurate, I will look at the deposition and determine
21 whose position is correct.

22 If there is no dispute as to the summaries,
23 then I'll simply read the summaries instead of the
24 depositions.

25 MR. JANICKE: I understand.

THE COURT: I take it that you each read the

other's summaries and made what objections you want to make with respect to the accuracy of the other party's summaries.

MR. JANICKE: I have.

MR. BRADLEY: Your Honor, we have not read all theirs yet but I will try to do that tonight. We have introduced, I believe, the actual transcripts of the depositions as exhibits, the ones we wanted in.

THE COURT: All right. You should do likewise.

In other words, if you want to offer a deposition, give it an exhibit number and it will be received in evidence. You don't need to give exhibit numbers to the summaries of depositions but you may if you want to.

MR. JANICKE: As I understand Defendant's Exhibits have not been received in evidence yet. I have objection to several of them and I don't want it to be understood that they are all admitted by virtue of being in the box.

MR. BRADLEY: We haven't offered them yet.

2 THE COURT: I won't look at them if you tell me
3 that they are not admitted or if you tell me they will be
4 objected to.

5 MR. JANICKE: I have one other question. Yester-
6 day you asked if we intended to read anything, that we
7 inform you in advance so we can dispense with reading it and
8 my question has to do with the statement of agreed facts. It
9 runs some 95 pages.

10 THE COURT: I will read that. You don't need
11 to read it. And believe me, I will get more out of it from
12 reading it than from sitting here and hearing it read.

13 MR. JANICKE: My problem is with examining wit-
14 nesses. If you are not familiar with facts, I am assuming
15 facts not in evidence. That is the problem. Since they
16 are agreed facts, I am assuming they ought to be in evidence.

17 THE COURT: They are not necessarily in evidence,
18 but the necessity of evidence is dispensed with if they
19 are agreed facts, I am bound by them. I will accept them.

20 MR. JANICKE: That is what I wanted to know.

21 Thank you.

22 THE COURT: In examining the witness, if your
23 questions assume a fact that is in one of the agreed facts,
24 I assume that there won't be an objection on that basis.

25 If there is, then the one proposing the question

1 zb-2

Romanow-cross

2 can direct me to the agreed facts and I will look at the
3 one in question.

4 MR.JANICKE: I thought that might explain some
5 of what happened yesterday.

6 THE COURT: Please don't be dismayed by my
7 comments. I don't want to use this pedestal as a basis
8 for needling counsel or as a privileged position for
9 needling counsel. I can't help but be struck by the difference
10 between the way cases are tried by patent counsel and
11 the way cases are tried by all of the other members of the
12 bar. This is not something that I was so acutely aware
13 of, until I came up here and started listening to negligence
14 lawyers, admiralty lawyers and all other kinds of lawyers
15 try cases, and believe me, there is about as much difference
16 between those two worlds as any two I can think of.

17 And I didn't expect to find it. But it is a
18 fact of life. And I am not saying which way is better. But
19 it is a striking difference.

20 MR.BRADLEY: Your Honor, should I continue
21 with questioning Mr. Romanow.

22 F R A N K F R E D E R I C R O M A N O W resumed.

23 CROSS-EXAMINATION (continued)

24 BY MR. BRADLEY:

25 Q Mr.Romanow, I want to hand you Defendant's

zb-3

Romanow-cross

Exhibit C and just for purposes of clarification, I would like to mention that the defendant's exhibits have been given letters A,B and C, and so forth, rather than numbers, and that the letters are in each case on a little blue tag on the front of the exhibit.

In addition, in some of the books, the prior art books where we have tabs, there may be more than one document behind the tab. This is done where the documents are related to each other, such as a patent and a publication pertinent to it. In those cases we put little green tabs on the side of the secondary document.

I now hand you Defendant's Exhibit C and I ask you to turn to Tab 4 which shows Dreher Patent 2,904,640. Again I will mention that we have added coloring to some of the patents to show what we think is some of the pertinent parts of them and if you find this distracting, please just ignore it.

Were you aware of this patent at the time of the work at Bell on the Y1?

A I was not.

Q I believe you testified yesterday that the tube 21 is a voice tube, is that correct? It is colored green?

A I don't call it -- well, it is a small tube.

Q Would you call it a voice tube?

zb-4

Romanow-cross

1
2 A No, it is because it doesn't -- a voice tube
3 is usually referred to one that conducts from the corner of
4 the mouth to the ear. This is an ear tube. Ear insert tube
5 or something like that.

6 Q Does this conduct the voice?

7 A Yes.

8 Q Let me ask you again --

9 A The voice from a distant person. It doesn't con
10 duct the voice from the mouth position to the microphone.

1B

MR. JANICKE: You are looking at the wrong

exhibit.

THE WITNESS: I beg your pardon.

MR. BRADLEY: I wonder if we could strike that,

your Honor.

THE COURT: All right, that may be stricken.

Start afresh.

MR. BRADLEY: From Tab 4.

Q I am sorry, Mr. Romanow.

A I am sorry, too.

Q Let me ask you were you aware of this patent at

the time your work began at Bell on the Y1?

A There is so much reverberance here I have

trouble hearing you. If you come a little closer, it would

be a big help.

Q Were you aware of this patent at the time of

the work at Bell on the Y-1?

A No, we weren't.

Q I believe you testified yesterday that the tube

21 in the patent is a voice tube, is that correct?

A Right.

Q Let me say first this is an ear mold supported

headset, is that correct?

A Yes.

1 Q In the portion that is No. 11 and colored blue
2
3 on the ear mold, that projects into the ears, does it not?

4 A Yes.

5 Q Do you know how close it projects into the ear
6
7 in terms of how close it is to the ear drum?

8 A I can only guess. It would be a centimeter away
9
10 from the ear drum, of that order.

11 Q That would be an approximate figure?

12 A Very approximate.

13 Q Is the passage through the ear mold from the
14
15 transducer 16 to the end of that tip 19 an acoustical tube?

16 A It is a small, very small, tube. It would not
17
18 have the properties that I referred to, the recurring pro-
19
20 perties that we talked about yesterday.

21 Q But you would characterize it as a tube?

22 A It would have one of the residual properties of
23
24 the tube. It would have a mass in there, what we refer to
25
26 as a mass effect.

27 Q But would you characterize it as a tube?

28 A I would say it is a very small tube.

29 Q Would you characterize it as an acoustical tube?

30 A In describing it and looking for the properties
31
32 of, say, this whole combination, I would say it would be a
33
34 very small tube.

gwb-3

Romanow-cross

Q In terms of what is generally used in the field in terminology, would this generally be spoken of as an acoustical tube?

A People would call it in different ways. Some people would call it an orifice, some a port, some an opening. There would not be one common terminology for it.

Q But some would call it an acoustical tube?

A Some would call it a short acoustical tube.

THE COURT: You are talking now about the Extension 11?

THE WITNESS: Yes.

MR. BRADLEY: I am talking about the entire passage, your Honor, actually the opening space through the ear mold.

THE COURT: The whole passageway?

MR. BRADLEY: The passageway from the transducer into the edge of that tip 11.

THE WITNESS: I thought you were talking about this blue section in here.

Q I was referring to the actual passage through the ear mold from the transducer to the end of that tip.

A If I talked to another person who was versed in the art of acoustics, I would say to him there is a small cavity adjacent to the receiver. Then there is a tubular

gwb-4

Romanow-cross

1
2 portion, a hole drilled into the ear insert. Then there
3 would be another cavity which is larger because now the
4 cross-section changes. There would be a cavity which is
5 adjacent to the ear drum. This would be my description
6 of it.

7 Q I am not sure I understand. Just as you leave the
8 transducer 16 in the interior of the ear mold, there is a
9 cavity area there, is that correct?

10 A Yes. As you leave it here, there is an enlarged
11 portion in here which I would call a cavity because it is
12 varying, it isn't tubular.

13 Q From that cavity to the end of the tip 19, that
14 is what I am referring to. Would that be an acoustical
15 tube?

16 A You can call it a tube maybe, but I, in talking to
17 other people, may not call it a tube. I may call it an
18 orifice, I may call it a hole. I doubt that I would call it
19 a tube.

20 Q So if I understand you correctly, some people
21 would call it an acoustical tube and some would not?

22 A They would call it by a different name because
23 they don't have the properties I am talking about, the
24 recurrence of resonancy.

End 2A

1 2bam qwrfl

Romanow-cross

2 Q Have you written a very well known paper in the
3 field entitled Methods For Measuring The Performance Of
4 Hearing Aids?

5 A Yes.

6 Q I would like to hand you a copy of that, which
7 is Defendant's Exhibit BB, and I refer you particularly
8 to page 297.

9 If I understand this correctly, this is a simulated
10 condition for measuring a receiver into an ear mold, is
11 that correct?

12 A Right. We are talking about 297 and we are
13 talking about this little receiver here and we are talking
14 about this and the cavity in here in this portion.

15 Q And you are referring to Fig. 3?

16 A Right.

17 Q Just below the receiver there is a portion that
18 would simulate the earpiece or ear mold that would be on
19 the wearer that the receiver is plugged into, is that
20 correct?

21 A Would you repeat that for me, please?

22 Q Just below the receiver where it has those heavy
23 cross hatched lines, those heavy cross hatched lines
24 represent the earpiece --

25 A Right.

2 Q -- ear mold which the wearer would be wearing,
3 is that correct?

4 A Right.

5 Q In this drawing, do you refer to the passage
6 through that as a tube?

7 A Yes.

8 Q And also in the text below where it says the
9 length and size of the tube corresponds to the representative
10 size of holes in earpieces?

11 A Yes.

12 Q So that in this article, which was written back
13 in 1942, you referred to that passage as tube?

14 A Yes. It is an idealized situation in this case.
15 It doesn't represent quite what Dreher has in here because
16 of the varying cross-sections in here. This is an idealized
17 situation and it was referred to as a tubular portion.

18 Q And the idealized situation is to simulate the
19 actual situation which would be, for example, as shown, in
20 Dreher?

21 A As well as one can.

22 Q You mentioned yesterday about the use of high
23 impedance microphones.

24 A Yes.

25 Q And I notice in this same article where you have

1 the tube facing into a microphone and don't you call
2 out here at the end of the same paragraph we are talking
3 about on page 297 that to use a high impedance transmitter
4 or microphone?
5

6 A Yes. This refers to the mechanical impedance
7 in here.

8 Q Yes, mechanical impedance of the microphone?

9 A Right.

10 THE COURT: What exhibit number were you referring
11 to?

12 MR. BRADLEY: The article is Exhibit BB.

13 Q Mr. Romanow, would you turn to Tab 4-B of
14 Defendant's Exhibit C.

15 A Yes.

16 Q There is shown there Henderson Patent 2,939,923,
17 and I refer you particularly to Fig. 1. Do you see that?

18 A Yes.

19 Q This shows an ear mold with the receiver plugged
20 into the No. 17?

21 A Right.

22 Q And a projection out of the ear mold, is that
23 correct?

24 A Yes.

25 Q The projection has No. 22 on it. Would you call

1 that 22 an acoustical tube?

2
3 A Well, by the definition we gave yesterday, in order
4 to differentiate between the voice tube and the ear tube we
5 made the difference between something that has some
6 length to it in which the resonances would be quite apparent.
7 On that basis, accepting that definition, this would be an
8 orifice rather than a tube.

9 Q Let me ask you, rather than using that definition,
10 let me ask you what is generally understood in terminology
11 in the field.

12 A If I talk to another acoustician I would talk about
13 an orifice attachment.

14 THE COURT: What exhibit were you referring to
15 there, counsel?

16 MR. BRADLEY: Tab 4-B of Defendant's Exhibit C,
17 your Honor, the Henderson Patent.

18 Q Mr. Romanow, I would like to show you another
19 document which is apparently one that you authored and
20 it is designated Defendant's Exhibit YY-3 and perhaps you
21 could indicate what that document is?

22 A The document in here are some pages out of a
23 set of course notes which I wrote myself to a certain
24 extent and I had some co-authors who helped me write the
25 text.

Q Did you have the general responsibility for them?

MR. JANICKE: May I have the other copy of it?

MR. BRADLEY: Yes.

A Yes, I had the general responsibility.

Q I refer you to page 30 of this article, if you please, and particularly to the sentence a little past the middle of the first paragraph which says:

"When the tube is short compared to the wave length of sound, less than one-eighth of a wave length," and then it continues.

Is that an accurate characterization of a body as being a tube when it is less than one-eighth of a wave length?

A Well, when I wrote these course notes, this was in 1948 or so. In the meantime, there had been some refinement in my thoughts as to how one can classify these things. As I look at these tubes in connection with instrumentalities, I find that in order to avoid the peak response that we talked about yesterday in tubes, the one that might be quite disturbing I find that this is too restrictive a figure.

1 3a am 1zrf 1 Romanow-cross 171
2 Q Did this refinement in your thinking occur before
3 1961 or after, do you recall?

4 A It has been sort of a continuous thinking about
5 these things. I couldn't pinpoint it.

6 Q Do you know of any text authority that would
7 define a tube as being at least one and a half inches?

8 A At least -- I don't know of any. I can't -- I
9 don't know of any.

10 Q Before turning away from your article, I refer you
11 to page 26, toward the top of the page. On the second
12 line there is a statement that a horn is a tube of varying
13 cross-section, and then the sentence continues.

14 Is that a proper definition of the term horn?

15 A Yes, indeed.

16 Q I hand you a copy of Defendant's Exhibit E, which
17 is the acoustical terminology standard and refer you to page
18 28.

19 THE COURT: What is this, counsel?

20 MR. BRADLEY: Defendant's Exhibit E, your Honor.
21 The last page of it is page 28.

22 Q And in the left-hand column there, next to 6.69,
23 there is an actual definition of acoustic horn and then in
24 parenthesis, horn. And that also states that an acoustic
25 horn is a tube of varying cross section, does it not?

1 1zrf 2

ROMANOW-CROSS

2 A Right.

3 Q Going back to the Henderson Patent in Defendant's
4 Exhibit C, and we were looking at Fig. 1 which shows an
5 ear mold with a projection from it. And forgetting for the
6 moment whether that projection 22 is a tube or not, this
7 would be an ear mold that could be used as a replacement
8 for the ear mold of the Dreher Patent, could it not?

9 A It would depend what the purpose of the design is.
10 I don't know whether it could be replaceable, one for one.

11 Q Well, I'm not suggesting that someone might use it
12 in a given instance, but I'm just saying that these were
13 two alternate known ways of doing it, were they not, at
14 the time of these patents, which would be 1955 and 1957?

15 A I really don't know whether they exchange one for
16 one.

17 Q Would you look for just a moment at the Olney
18 Patent which you discussed and which is behind Tab 2 of
19 Defendant's Exhibit C.

20 A Yes.

21 Q I believe you talked about that patent as having
22 one or two acoustical voice tubes?

23 A Right.

24 Q But using an ear cap rather than an ear tube, is
25 that correct?

1 1zrf 3 Romanow-cross

2 A That's right.

3 Q And while having that patent in mind, I'd like
4 you to refer to, and I will show you my copy, the ARINC
5 publication which you also alluded to and which is behind
6 Tab 2-C of Defendant's Exhibit C, and I refer you particular
7 to the last page of the ARINC article, which would be the
8 page just immediately before Tab 3.

9 On this page they show with double ended arrows
10 what they call possible earpiece types, is that correct?

11 A Yes.

12 Q And these are suggested as possible earpiece
13 types for a lightweight boom microphone headset, is that
14 correct?

15 A Right.

16 Q Having the Olney et al patent in front of you and
17 in 1957 when the ARINC publication was issued, having
18 that in front of you and particularly this page 8, wouldn't
19 it be quite apparent that instead of using the earcap
20 in Olney, one could use the ear tube at the other end of the
21 arrow?

22 A Only I can answer to you is that many years
23 later we didn't do it this way so it wasn't apparent to us.

24 Q Did you have both of these documents in front of
25 you?

1 1zrf 4 Romanow-cross

2 A I knew about the Olney Patent. I don't recall
3 seeing this embodiment except that I had seen sometimes
4 in my professional life, I was aware of the substitution
5 but we never thought of it.

6 Q By substitution, you mean a substitution of the
7 earcap --

8 A Of the possible earpiece type with this.

9 Q You are referring now to page 8 of the ARINC
10 document?

11 A Right.

12 We never thought of it.

13 Q Well, just taking a factual situation, if
14 you gave an ordinary man, an ordinary engineer in your
15 group or in another group and you handed him this page 8 and
16 you handed him the Olney Patent and he came back and
17 he said, instead of using the earcap, I used the ear tube.
18 Would you think that he had made a remarkable advance? Of
19 would you think --

20 A I don't understand the question.

21 Q If you handed him these two, and I am making
22 that the supposition of the question, and he came back
23 and instead of implementing Olney exactly as shown in the
24 Olney figure, he replaced the earcap there by the earpiece
25 which is shown in the ARINC article, would you think he had

1 1zrf 5 Romanow-cross

2 done in terms of ideas, what to use -- would you think he
3 had done something just routine or something way beyond
4 that?

5 A Well, when Larkin did it, we thought he did quite
6 a nice piece of work there.

7 Q Do you know whether Larkin had both of these in
8 front of him at the time?

9 A I have no way of knowing that.

10 Q In connection with the Y-1 development, I under-
11 stand that in general terms you took a -- or whoever worked
12 with you took a Western Electric WE-52 unit and
13 used an exponential horn instead of the microphone at the
14 end of a boom, is that correct?

15 A Right.

16 Q Did I understand your testimony correctly that
17 there was no change in the transducers?

18 A The telephone receiver was the way it normally
19 was in the operator's set as I recall. The microphone, I
20 am vague about. I really don't know what that was. Whether
21 there was a smaller microphone than we had used -- I just
22 don't have a good recollection of it. The reason is that
23 it wasn't a very successful situation so you are prone
24 to forget things that are not successful. It just doesn't
25 record in your mind.

1 lzrf 6 Rcmanow-cross

2 Q You don't recall whether the microphone was changed
3 in size --

4 A What kind of microphone was used, I just don't
5 recall very well. It certainly wasn't a carbon transmitter,
6 which was a Western Electric transmitter in the 52 headset.
7 It must have been some other transmitter and I just don't
8 recall what we used.

9 Q You did eliminate -- I don't know whether it is
10 correct to refer to it as the trombone slide type --

11 A There was no trombone under those circumstances, no.

12 Q Was there any forward and back adjustment on the
13 Y-1 at all?

14 A As I recall, there was none.

15 Q You indicated that the weight of the WE-52
16 was ten ounces, is that correct?

17 A I think it is of the order of eight ounces.
18 I don't recall well enough. I never weighed these, you know.
19 There were other people who did that so I don't recall too
20 well. I think it is in excess of eight ounces but
21 just how much I don't know.

22 Q Would you estimate, then, that the change
23 you made to put the horn on the unit reduced the weight
24 in the order of two to three ounces?

25 A Of that order. I think that is correct.

1 1zrf 7

Romanow-cross

2 Q I show you a copy of a Roanwell brochure where
3 the WE-52 is offered for sale and I ask you whether you
4 see the weight designation here?

5 A Weight nine point eight ounces.

6 Q Does that refresh your recollection?

7 A Well, I said in excess of eight ounces. I
8 don't know them that accurately so this checks with what you
9 say.

10 Q I really wasn't trying to criticize you for that.
11 I was trying to pin it down as close as we could.

12 THE COURT: What does that say the weight is?

13 MR. BRADLEY: 9.8 ounces?

14 MR. ARNOLD: I think we have a stipulated finding
15 on that that it was in the neighborhood of nine ounces.
16 For the purpose of this suit, it was close enough.

17 MR. BRADLEY: I had forgotten about that.

18 MR. ARNOLD: Perfectly all right.

19 Q Mr. Romanow, you talked about the Larkin headset
20 and the plaintiff's headset, MS-50, which has been marked
21 as Plaintiff's Exhibit 18, and I have a copy of that
22 in my hand. I hand you a copy of the MS-50, of the
23 sample, I'm sorry, and a copy of the Larkin Patent in suit,
24 which is marked Defendant's Exhibit A. These two units,
25 - the MS-50 as compared to the unit shown in the Larkin

1 1zrf 8

Romanow-cross

2 Patent, are quite different, are they not?

3 A Well, I'm not sure where the differences are.
4 If you point them out to me, please.

5 Q Well, let's start out, do they use different
6 clips?

7 A Oh, yes. A little different clip.

8 Q One actually has a clip that goes on both sides,
9 and the other one has a sort of a spring clip on one
10 side?

11 A A little hook-like projection that hooks over
12 the earpiece.

13 Q In the case of the Larkin Patent, the transducer
14 tube connections are sort of a universal connection so the
15 tubes can more or less swing around in a circle, is that
16 correct?

17 A I have to look at it. I don't know what
18 difference you are referring to here.

Q I am saying, the connections between the acoustical tubes and the transducers in the patents -- they are on sort of a member that projects out and they would then, to be adjustable, would swing around in that fashion?

A Yes, it looks that way.

Q Whereas in the MS50, these are actually -- I am referring to the voice tubes, actually screw-threaded on there you turn the screw down, turn it up to make adjustment?

A To make the adjustment to the corner of the mouth that is correct.

Q Most of the adjustments you actually make when you put on the MS50 is to bend the tube yourself to the shape you want, is that correct?

A No, not alone. It slides on the eyeglass frame so once you get it to here -- yes, you can do some bending and also you have some motion in here, lateral motion along the eyepiece.

Q So it is a combination of the position and attitude of the transducer case plus conforming the tube to the proper position, is that correct?

A That's right.

Q Do you know if Larkin was ever able to get the headset in his patent to work?

A I have no knowledge of that.

zb-2

Romanow-cross
redirect

1 Q At the time you began the work at the Bell
2 Telephone laboratories which resulted in the models you
3 mentioned yesterday as I believe Models A to D, did you know
4 that behind the ear hearing aids had earlier been converted
5 into behind the ear headsets by adding a voice tube and
6 doing the necessary interwiring inside the casing?
7

8 A Had been converted into headsets?

9 Q Yes.

10 A We knew about Larkin.

11 Q I am referring to behind the ear units and
12 particularly taking --

13 A Not about headsets. I didn't know of any head-
14 sets.

15 Q You don't know that anybody previously -- having
16 taken behind the ear hearing aid and converted it to a behind
17 the ear headset?

18 A No.

19 MR. BRADLEY: I have no further questions.

20 THE COURT: Any redirect?

21 MR. JANICKE: Just a few, your Honor.

22 REDIRECT EXAMINATION

23 BY MR. JANICKE:

24 Q I would like to refer Mr. Romanow again to the
25 Bryant patent, Exhibit 70. If you put your thumb here in

zb-3

Romanow-redirect

Exhibit 70 so we can also look at -- the very next one, 71. Exhibit 71 is the front cover of an AT&T annual report and I would like to ask if you can identify the headset that appears on that cover?

A Yes.

Q What headset is that?

A That was a headset we had developed in our group. It is the Bryant headset.

Q Model 61?

A Model 61. It isn't the Model 61. It is the laboratory model but not the production model, I believe.

Q Let me make that my first question then. What if anything was the difference between the --

A Function --

Q Wait a minute. I want to ask the whole thing.

A Yes.

Q The difference between what is shown in the Bryant patent, what is shown in the next -- in the cover of the AT&T report, and the production model, were there differences?

A This is -- this AT&T report was almost identical to the Bryant patent. In fact it was a model made from drawings that Bryant had prepared and which were used for patent application.

zb-4

Romanow-redirect

1 Q How about the production model, how did that
2
3 differ?

4 A The transducers were somewhat different. They
5 were made by WesternElectric Company. These transducers were
6 some units we bought out in the field in order to study
7 the situation in order to see whether we could make a success-
8 ful supportable headset with an ear insert supportable
9 headset.

10 THE COURT: On the cover of Exhibit 71, the girl
11 has extending across the top of her head what in this
12 Xerographic copy looks like a black streak. I take it that
13 it not a head band?

14 THE WITNESS: No, that is ornamental. I don't
15 know what you would call it.

16 MR. JANICKE: That is a hair clip of some kind,
17 I think, having no connection with the headset.

18 THE WITNESS: It is like a band. Nothing to do
19 with the headset.

20 Q I neglected to ask you yesterday with respect
21 to this project, what do you know about the consideration
22 given, if any, to the appearance of the Model 61?

23 A A great deal of attention was given to the
24 appearance because we felt it was -- we always give a great
25 deal of attention to appearance when anything is used by

2 a customer and also now anything that is used in the labora-
3 tory. So a great deal of design -- appearance design was
4 done and it was done by a firm, the Dreyfuss firm here in
5 New York City, a well-known appearance design people.

6 Q Did your group at the laboratories participate to
7 any extent in the appearance design of the 61?

8 A Of which one?

9 Q Of the 61.

10 A You are referring to the 61?

11 Q Yes.

12 A Well, we coordinated the design effort with
13 Dreyfuss.

14 Q Was it the custom at Bell Laboratories to go to
15 an outside firm like Dreyfuss for customer devices?

16 A Yes. This started in -- very, very early in
17 my career. My earliest recollection was around 1931.

18 Q How would you describe the configuration of the
19 housing in the Model 61, at least in the form shown in
20 Exhibit 71?

21 A Well, the most approximate characterization was
22 a tear drop form. That is the best I can say.

23 Q You said that in the production model that was
24 actually marketed there were some differences. Can you
25 tell us what they were?

zb-6

Romanow-redirect

1 A The model was -- the production model was some-
2
3 what larger and so the form became a little more elongated
4 and the curves that were still curved portion, but it was
5 less of a tear drop appearance.

6 THE COURT: Mr. Janicke, I have to confess the
7 purpose of this line of examination totally escapes me.

8 MR. JANICKE: We have a design patent in issue,
9 your Honor. I wanted to lay the groundwork for how designs
10 of headsets were made and the attention paid to them in the
11 art prior to the Hutchings design.

12 THE COURT: This is not an accused structure.

13 MR. JANICKE: No, it is the prior art headset
14 next chronologically before Hutchings made his design.

15 THE COURT: Well, I have serious doubt about the
16 relevancy of it. I hope it isn't going to be --

17 MR. JANICKE: I have completed the questions on
18 it, your Honor.

19 Q As far as you know, Mr. Romanow, what was the
20 first headset of outside design to receive a KS approval from
21 the Bell System?

22 A As far as I know, the first lightweight
23 headset was the Larkin headset.

24 MR. JANICKE: No further questions.

25 MR. BRADLEY: No questions.

zb-7

Foley-direct

THE COURT: All right. Thank you, Mr. Romanow.

(Witness excused.)

MR. JANICKE: James Foley.

JAMES PETER FOLEY, called as a witness
by the plaintiff, having been first duly sworn, was
examined and testified as follows:

DIRECT EXAMINATION

BY MR. JANICKE:

Q What is your present occupation, Mr. Foley?

A I am an engineer working for Roanwell Corporation.

THE COURT: For whom?

THE WITNESS: Roanwell Corporation.

Q What are your duties with Roanwell Corporation
at the present time?

A My present title is operations manager and I
oversee the running of engineering, manufacturing and QC.

Q I lost the last one.

A QC.

Q Quality control?

A Quality control.

Q Are you a member of the engineering council
at Roanwell?

A I --

Q Excuse me. I didn't mean engineering council.

zb-8

Foley-direct

What is the management council at Roanwell?

A At one time it was the executive council. It is no longer in existence.

Q Is there some equivalent --

A There is a control group now.

Q Control group?

A Yes.

Q Are you a member of that?

A Yes, I am.

MR. JANICKE: Your Honor, Mr. Foley was originally on the defendant's exhibit list and I was later informed --

THE COURT: You mean their witness list?

MR. JANICKE: Yes. I was later informed that they would not call him. I would therefore like him to be declared an adverse witness so that I may use leading questions.

THE COURT: You are still an employee of Roanwell?

THE WITNESS: Yes, I am.

THE COURT: All right.

MR. BRADLEY: We have no objection, your Honor.

Q When did you join Roanwell Corporation?

A In June of 1956.

Q Have you been there continuously from 1956 until now?

1

2

A No, I have not.

3

Q At what period of time were you not at Roanwell?

4

A From December of 1957 until June of 1959.

5

Q From June '59 to present, you have been there continuously?

6

A Yes.

7

Q Have you attended engineering school?

8

A Yes, I have.

9

Q To what extent?

10

A I had gone four years to CCNY and I then went to New York City Community College and have a degree, associate degree in mechanical technology. I then attended Queens College and I have a B.A. and I am presently going to Queens College and I am halfway through my master's program.

11

Q In what field is the master's program?

12

A It is in economics.

13

Q Have you studied any course in acoustics?

14

A In general physics and I had parts of one course at Queens College in acoustics.

15

Q Do you recall having given your deposition in this case in August of last year?

16

A Yes.

17

Q And you signed it two weeks ago on March 5th of this year?

18

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25

ab-10

Foley-direct

188

A Yes.

Q On Page 9 -- do you have a copy of your deposition with you?

A No, I don't.

Q Perhaps you can work from my copy.

According to your deposition you began performing assignments relating to headset design at Roanwell in about 1959, is that correct?

A That's correct.

Q And you worked on a helmet mounting for the 154 headset?

A That's correct.

Q And a boom mounting bracket for another headset?

A That's correct.

Ex 3B

App. 366

Q You did some other headset design projects in late 1959 and the early sixties, is that right?

A That is correct. Are we still on Page 9?

Q No, I am not on any particular page right now.

Did you participate at Roanwell in the design of a headset called the Lightweight?

A Yes.

Q I show you Plaintiff's Exhibit 134 and ask you if this is a Roanwell Lightweight headset?

A It is one of the models Roanwell makes, yes.

Q Does the Lightweight come in several models?

A It comes in four basic models.

Q Would you describe the other three? First, please describe this one for the record and then describe the other three briefly.

A That is a single-sided, circumaural with a noise canceling carbon microphone. It looks like it has a magnetic receiver inside of it about a headband with a comfort pad on one side.

Q And the adjustment of the boom microphone is by this hinged piece, two hinged pieces?

A It is two hinged pieces plus there is a joint back there which is adjustable. It is a nut joint which allows the boom to slide back and forth.

1 Q Is this the lightest of the various versions
2
3 of the Lightweight headsets?

4 A No, it would not be.

5 Q Can you describe what other models there are?

6 A Yes. There is a single-sided, less the boom
7 microphone.

8 Q You don't transmit with that headset?

9 A That's right. It is a listening type headset.

10 Q Let me say then, of the Lightweight headsets for
11 transmitting and receiving, is Exhibit 134 the lightest?

12 A It would be one of the lightest, yes.

13 Q What are the other versions of the Lightweight?

14 A There is the single-sided listening-no transmit,
15 then there is the double-sided listening-no transmit, and
16 the double-sided transmit.

17 Q I would like you to refer, in connection with
18 Exhibit 134, to two Roanwell brochures which are Plaintiff's
19 Exhibits 25 and 26.

20 Are you familiar with Exhibits 25 and 26?

21 A Yes, I am.

22 Q What are they?

23 A 25 is a brochure showing the various combinations
24 of our Lightweight line.

25 Q And 26?

1
2 A 26 is a comparison of our Lightweight headset
3 with another headset.

4 Q Exhibit 26 indicates that the weight of the
5 Lightweight in its various versions can be as light as half
6 a pound, is that correct?

7 A That's correct.

8 Q On Page 17 of your deposition, if you would like
9 to refer to it, you testified that the design project for the
10 Lightweight headset was begun in early 1961, and my question
11 is, is that correct?

12 A This is on Page 17?

13 Q Yes.

14 A To the best I recall, it was in the '61-'62
15 time frame that we worked on this Lightweight headset.

16 End 4A
17
18
19
20
21
22
23
24
25

1 4b am gwrif

Foley-direct

2 Q Do you know how long the project took?

3 A In order to complete the basic headset, we
4 worked a little bit over a year on it.

5 Q Do you know about when it was finally in a market-
6 able form?

7 A I think it was in a marketable form somewhere in
8 '64 or '65.

9 Q Mr. Wolf worked with you and was your superior
10 on this project, is that correct?

11 A That is correct.

12 Q Mr. Wolf had a degree in mechanical engineering?

13 A That is correct.

14 Q And also working with you was a layout draftsman,
15 Mr. LaMarsh?

16 A That is correct.

17 Q Were any other people at Ronwell in on this pro-
18 ject?

19 A Well, there were several model makers that worked
20 along with r and they were making prototypes for us.

21 Q You testified at page 20 of your deposition that
22 one of the design criteria for this project was low weight,
23 is that right?

24 A That is correct.

25 Q Why was low weight at that time a design criterion?

1 gwrf 2

Foley-direct

2 A The majority of headsets up to that time were
3 of a military type and they were generally in the area
4 of approximately one pound. Of course, the heavy weight of
5 these headsets is a fatigue factor and Roanwell was coming
6 through with a lighter version of those particular type
7 headsets.

8 Q In addition to fatigue, I believe you in your
9 deposition stated there were additional problems such as
10 headaches from these heavy headsets, is that right?

11 A Well, headsets up to that point in time had
12 extremely high pressure on the head. They were particularly
13 made for environments which had high ambient noise, and
14 thus the couplings or the headbands were of high stiffness
15 and the cups were in general very large, large volumes,
16 were heavy walls because to exclude the ambient noise
17 condition, especially in the low frequency ranges, from
18 about one to five cycles up to about 800 cycles, the factor
19 in that is a stiffness factor of the headset and also
20 of the size of the cups and of the plastic in the
21 wall thickness.

22 And most headsets were made that way up until
23 the late 1950s.

24 Now, our headset was not particularly pointed
25 to the military although we felt that we could sell these

1 gwrfr 3 Foley-direct

2 headsets to the military in certain locations.

3 Q You are referring still to the lightweight headset?

4 A Yes, sir.

5 Q You say it was not aimed principally at the mili-
6 tary but you thought could be sold to the military?

7 A Yes, sir.

8 Q What was the market aim of that headset?

9 A The aim was for a lightweight headset that could
10 be used in telephone communication, could be used in
11 television, could be used by various military agencies.
12 It was a very wide type of expanse that we were looking for
13 for use of this particular headset.

14 Q In fact, I believe you testified that it was
15 aimed at virtually every segment of the headset market,
16 is that right?

17 A That is correct, where it could be used and the am-
18 bient noise conditions weren't such that this headset would
19 not exclude noise.

20 THE COURT: Are you going to have much more
21 direct, Mr. Janicke?

22 MR. JANICKE: Yes, your Honor.

23 THE COURT: Let's take our morning break now for
24 ten minutes.

25 (Recess.)

1 5a am 1zrf 1 Foley-direct

2 Q Mr. Foley, we were discussing the two Roanwell
3 brochures or promotional pieces, Exhibit 25 and 26 concerning
4 the lightweight headset and you had told us that there
5 were fatigue problems and some headache problems in many
6 or most of the prior art headsets you had experience with,
7 is that right?

8 A That is correct.

9 Q In your deposition you also mentioned a perspiration
10 problem related to heat in those headsets.

11 How did that occur?

12 A When enclosing the ear with what at that time was
13 vinyl cushions, like any enclosure, the body heat would build
14 up inside the enclosure and would cause sweat in the area
15 around the cushion.

16 Q What would the user do typically when that
17 phenomenon occurred?

18 A He complained a lot but there wasn't too much
19 that he could do because most headsets during the second
20 World War, I guess through the early '50s, which had chamois-
21 type of ear cushions which did prevent some of the sweat.
22 It allowed more air circulation around the cushions.

23 Q Are you referring to something like the Airmed
24 unit, Exhibit 10?

25 A No. This is actually a chamois cushion with a

2 chamois material which would allow the cushions to
3 breathe and allow air to pass into the ear canal and into
4 the cavity of the headset.

5 THE COURT: It was a circumauricular pad that was
6 faced with chamois leather. I wore them for years.

7 Q In your deposition you testified that as a result
8 of these problems with the heavy headsets, the user would
9 attempt to wear the headset improperly or take it off
10 altogether, is that correct?

11 A That is correct.

12 Q In view of these problems and the large market
13 you were going to aim for with the Roanwell lightweight pro-
14 ject, would you say that the need for lightweight at Roanwell
15 in 1961 was intense?

16 A I wouldn't use the word intense.

17 Q How would you characterize it?

18 A I would characterize it as another project that we
19 were looking at at the time. It was another headset,
20 as it was another switchbox and we were looking at many
21 many things during that period. With all the sputniks and
22 everything going up, the Army, Navy, Air Force and NASA
23 were very concerned with various types of headsets and
24 so we were looking at all different types.

25 Q If you look at the last page of Exhibit 26 --

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25

lzrf 3

Foley-direct

197

THE COURT: Which exhibit is this?

MR. JANICKE: 26, your Honor.

THE COURT: Exhibit 26?

MR. JANICKE: Yes.

Q The Roanwell material indicates that in addition to defense applications, at the time the Roanwell Lightweight was being advertised here, Roanwell was involved in industrial headsets for telephone operators and so forth, is that correct?

A That is correct.

Q Can you give us an approximate date as to when advertising material of this nature first came out on the lightweight?

A I do not know that.

Q Well, at the time of the lightweight project in '61 or '62 when it began, was Roanwell at that time producing industrial headsets for operators?

A Yes, they were.

Q Were they producing commercial headsets as set forth in the exhibit for radio, TV, pilots, crewmen?

A Yes, they were.

Q And hobbyist headsets for ham operators and tape monitoring?

A They were trying to get into that field, yes.

Q Were they producing special headsets for language laboratories, organ consoles, auditoriums and home use TV?

A I only knew of two, which was the language laboratories and the home use TV type.

Q So Roanwell was apparently involved in many applications other than military applications at the time your project began, weren't they?

A Yes.

Q You testified at page 50 of your deposition that you gave no thought to any design other than circumaural on the receive side; is that correct?

A As the project was given to me, it was a circumaural headset that they wanted me to design.

Q That had already been determined?

A Yes, it had been.

Q Do you know by whom?

A I would have to assume it was the director of engineering.

Q Who gave you the directive that it must be circumaural?

A Robert Wolf.

MR. BRADLEY: If your Honor please, I suggest to the witness not to assume unless you either know or really have reason to know.

2 Q The directive to you came from Mr. Wolf?

3 A That is correct.

4 Q What was his position in the company at that time?

5 A He was a design engineer.

6 Q On the transmit side, you indicated in your
7 deposition that for a time a horn was considered to be used
8 on the transmit side.

9 A That is not correct.

10 Q No?

11 A I think I indicated in my deposition that while
12 this project was going on, a Mr. Marchand Gaston.

13 Q Gaston Marchand.

14 Q M-a-r-c-h-a-n-d.

15 A Around the time period of 1964 tried to make an
16 exponential type horn with a M101 type element into a
17 noise cancelling microphone.

18 Q But that was not part of the lightweight project?

19 A It was not part of the original lightweight project

20 Q Was his work a furtherance of that project, in
21 other words, a modification of the lightweight or was it an
22 entirely different effort?

23 A I do not know that.

24 Q And you indicated that Mr. Marchand was an expert
25 in acoustics and widely known in the industry, is that right?

2 A Yes, he was.

3 THE COURT: Was he an employee of Roanwell?

4 THE WITNESS: Yes, he was.

5 Q What did he do at Roanwell in the period of the
6 first half of the 1960s?

7 A All I can say, I know he was involved in all the
8 transducers that Roanwell was producing. In particular,
9 we were developing the M101, the RE300. The M6. And the RE200

10 Q Let's go back to this horn. I would like you to
11 tell us whatever you know about what consideration and
12 result happened with the horn.

13 A Mr. Marchand asked me to make a model placing a
14 horn on a lightweight cup, putting an M101 element in the
15 upper structure of this horn which was on a ball joint,
16 which would allow it to pivot up and down and through, if
17 you were to look to ground level, through a certain amount
18 of degrees, so you could place it at the corner of the mouth.

19 It had two tubes. It was exponential in nature.
20 One tube went to the front of the diaphragm and the other tube
21 went to the rear of the diaphragm.

22 Q Both these tubes were connected to the microphone?

23 A To the front and rear of the diaphragm of the micro-
24 phone, that is correct.

25 Q For noise cancellation purposes?

2 A It was intended for a noise cancelling mike, that
3 is correct.

4 Q Can you describe for us briefly the 101 microphone
5 that was what was suggested to be employed there?

6 A The M101 microphone is a dynamic noise cancelling.
7 It is approximately one inch in diameter by approximately
8 one quarter inch in height.

9 Q Circular configuration?

10 A It is circular with a flat on one side where
11 the electrical connection is made.

12 Q And the microphone was to be placed where with
13 respect to the ball joint?

14 A It was not -- it was not the microphone. It was
15 the microphone element that was placed in this horn
16 at the top outside of the shape of the cup itself.

17 Q Was that configuration ever marketed by Swanwell?

18 A No, it was not.

19 Q What do you know about it after this project
20 to assemble it was given to you?

21 A One headset was made, one model, one prototype.
22 It was given to Mr. Marchand. He tested it and he made a
23 report on it.

24 Q Do you know what his report indicated?

25 A The report indicated some problems with frequency

2 response and by that I mean he was comparing that with
3 an M33 in a unit which is the M87, which is probably the
4 finest noise cancelling mike on the market today. And he
5 took signal to noise ratio to find out what the noise
6 cancellation of the unit was, which was also included
7 in his report.

8 Q Do you know what happened to the project
9 after you built the one unit and he did his test and
10 rendered his report, was that the end of it?

11 A That was the end of it as far as I was concerned,
12 yes.

1 Q One last thing on this project. You indicated
2
3 in your deposition that at the time of the project you
4 and others at Roanwell were aware of stethoscope-type units,
5 I believe offered by Telex?

6 A That is correct.

7 Q And that would have a microphone where?

8 A It didn't have a microphone.

9 Q No microphone?

10 A It had a receiver element at a yoke junction
11 with two acoustical tubes going to the ear with a connector
12 which could be plugged in, in most cases as we had seen it
13 on airliners, where you wanted individualm usic.

14 Q And the receiver element would be then lying
15 around on your chest area?

16 A That is correct.

17 Q Did you pursue that concept in any headset work
18 at Roanwell?

19 A I was not involved in anything like that.

20 Q With regard to positional stability in miniature
21 headsets, you indicated that positioning of the voice tube
22 in a headset like the R70 or the R71 of Roanwell was very
23 important, is that right?

24 A You are just talking about the '70 and the '71?

25 Q Yes.

1 zb-2 Foley-direct

2 A Yes, it is.

3 Q And that a quarter-inch movement would cause
4 a noticeable drop off in volume?

5 A It depends in which direction you are talking
6 about, the speech tube moving away from the corner of the
7 mouth, but -- and depending on how well you can hear,
8 but changes of magnitudes from 3 to 4 db can take place
9 by movements of that tube away from the corner of the mouth.

10 Q What is the difference in the direction of move-
11 ment between vertical and horizontal and lengthwise, I
12 guess might be the other one? You say there is a
13 difference in the drop off depending on which way the movement
14 goes?

15 A Well, depends on, you know, the tube can rotate
16 and it would rotate a quarter inch, but be below the mouth.
17 I think it would be a little more difficult for the sound
18 pressure to be picked up.

19 Q How about in the lateral direction, left to
20 right, if the end of the tube were to move left to right?

21 A I wouldn't know. I never saw any tests like
22 that.

23 Q What do you base your opinion on the quarter-
24 inch movement causing the three or four db drop, on what
25 kind of movement are you speaking of?

1 zb-3

Foley-direct

2 A I have been told by people in acoustics at
3 Roanwell who have done tests like that.

4 Q Did they specify what particular kind of movement
5 they were talking about?

6 A In general, movements away from a microphone
7 and what they would do is increase the distance away from
8 -- in a direct axial line.

9 Q My question has to do with the open end of a voice
10 tube initially positioned in its optimum position and I want
11 to know if you have any information what the effect of up and
12 down movement versus left and right movement is?

13 A I wouldn't have any information like that.

14 Q The information you have wasn't specific as to
15 which kind of movement was involved?

16 A I think I had said axial movement away from.
17 By axial, away in a straight line.

18 Q Making the tube longer? Telescoping the tube
19 longer?

20 A All right, telescoping the tube longer.

21 Q Moving to the miniature program of Roanwell
22 wherein the R70 and R71 were developed, that was called the
23 MOH program?

24 A That is correct.

25 Q What does that mean?

zb-4

Foley-direct

1 A Miniature operator headset.

2 Q You indicated in your deposition that there had
3 been some logistics and cost problems with the Bell model
4 61, is that right?

5 A That's correct.

6 Q What were those problems?

7 A The problems as we heard it from the Bell System
8 were we were having problems with their ear mold in that
9 they had a great turnover of telephone operators and it was
10 costing them in the vicinity from \$12 to \$13 per ear mold.

11 The other problem was they just didn't have enough
12 people to make these molds, so they were seeking other
13 means of making the molds.

14 Q Would typically two molds be made for a given
15 operator or only one for the most preferred ear, which way
16 is it done?

17 A They made two.

18 Q You indicated that at the beginning of this MOH
19 program the Roanwell engineering department in the spring of
20 1969 was committed to a voice tube under the ear approach,
21 is that right? I refer you to Page 93 of your deposition.

22 A 93 that was?

23 Q Yes.

24 A In that time frame engineering had done consider-
25

zb-5

Foley-direct

1 able work in both -- considerable work in talking about
2 sketches. We made somewhere around -- somewhere around the
3 summertime of 1969 sketches were being made of various con-
4 figurations with the speech tube under the ear and on top
5 of the ear, as well as the capsules being different configura-
6 tions. One is outstanding because it was a cylinder rather
7 than looking like a hearing aid.
8

9 And I think I had indicated to you that we
10 had a meeting with Mr. Nichols in that time frame.

11 Q Mr. Nichols is who?

12 A He is a gentleman, I don't know his exact posi-
13 tion, at Unex.

14 Q Unex Laboratories?

15 A That is correct.

16 Q They are the people who designed and built the
17 R70 and 71 for you?

18 A They did work with us on it, yes.

19 Q Prior to the discussions with Mr. Nichols, I
20 would like to concentrate on your statement on Page 93
21 of the deposition. "Engineering felt we wanted to build
22 a 71 configuration."

23 That is the one with the voice tube out the
24 bottom, right?

25 A That's correct.

App. 385

zb-6

Foley-direct

Q Do you know why they wanted to build that configuration?

A Yes. Some of the groundwork that was laid for us, that we wanted to use as many parts as possible utilized in the 61A, and the 71 configuration was just the easiest to get to because the whole speech tube configuration plus the transmitter, transmitter boot,, receiver, receiver boot, amplifier cord, except for the connector that we had to design, were all the same.

Q Wasn't that true of the R70 as well?

A No, the speech tube configuration was slightly different. We had to come up with a different way of fastening the 70 to the capsule.

Q Could you demonstrate with Exhibits 4 and 5 the R70 and 71, the difference of attachment of the voice tube?

A Yes. In the 71, the attachment is very much like we have in the 61. There is a retainer which engages this ferrule and that whole system is exactly the same as the 61A.

Q In the 70?

A In the 70 it is a different system. There is a ferrule. It is not used on the 61 and there is also a different acoustical seal used in it which is totally different than the 61.

zb-7

Foley-direct

MR. JANICKE: Where is the acoustical seal?

THE WITNESS: There are two acoustical seals.

There is a rubber configuration internal --

Q Inside the --

A There is a ball joint. And that seals off the front part of this tube and then internally there is a nipple which is part of the transmitter boot which then engages this tube internally and seals off the other portion of it.

THE COURT: Do you have a Model 61 available?

MR. JANICKE: I don't have a specimen, your Honor.

Q So the ferrule design did not come from the 61?

A That is correct.

Q Where did it come from?

A I do not know because I was not involved in the project at that time.

MR. BRADLEY: Your Honor, would you like to see Model 61? We can send for one.

THE COURT: I just thought if one were available it would be helpful to look at it. Maybe you have a drawing or a photograph of it.

MR. BRADLEY: We are only ten minutes away.

MR. JANICKE: The best photograph we have is that AT&T annual report. We have an original of that in

zb-8

Foley-direct

the clerk's exhibits.

THE COURT: Had you made the Model 61 for Bell?

THE WITNESS: Yes, we did.

MR. ARNOLD: May I interrupt as a point of personal favor. I find that one of my hearing aid batteries is played out and I am losing half the testimony.

Does anyone know where I can get one close by?

(Discussion off the record.)

Q Are the transducers used in the R70 and 871 the same?

A Yes, they are.

Tk 6A

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25

gwb-1

Foley-direct

Q Other than the redesign of the ferrule, are you aware of any other reasons why engineering was committed to the under ear tube approach in the spring of '69?

A No.

Q You also testified at Page 93 of your deposition: "Sales department felt that they had to have what we would call a 'me-too' product."

What is the meaning of a me-too product?

A I do not know what his meaning was.

Q This is your language. Excuse me. Your testimony was that was the feeling of the sales department. I would like you to amplify what you meant by your answer.

A He used the phraseology with me of a me-too product.

Q "He" being?

A Robert Innes, a salesman.

THE COURT: Didn't you know what he meant? Do you think you knew what he meant?

THE WITNESS: I thought I knew what he meant.

THE COURT: What did you think he meant?

THE WITNESS: Something similar.

THE COURT: Me-too?

THE WITNESS: Me-too.

Q I testified that the appearance of the R70

1 was similar to that of the Plantronics StarSet, is that
2 right?
3

4 A That is correct.

5 Q And further, that prior to the StarSet you were
6 not aware of having seen any headset that appeared like the
7 StarSet, is that right?

8 A That's correct.

9 Q Is that still true?

10 A There is another headset that looks similar to
11 the StarSet.

12 Q Before or after StarSet?

13 A I think it was after StarSet.

14 Q Which one is that?

15 A That is the Venture I.

16 Q Who manufactures the Venture I?

17 A I think it is Northern Electric.

18 Q Can you describe what it is like?

19 THE COURT: Are you just learning about another
20 infringement?

21 MR. JANICKE: No, your Honor. We have reason to
22 distinguish the design and utility patents.

23 THE COURT: Is it really relevant?

24 MR. JANICKE: It is. They have charged us
25 with double patenting in that there is no difference between

gwb-3

Foley-direct

the utility and design patents. Here we have something that looks like the design patent and doesn't infringe the utility patent.

THE COURT: What can he say that will have any impact on my decision?

MR. JANICKE: He can tell us there is on the market a headset that looks like the StarSet, as he has said, and cannot possibly infringe the utility patent. Since we are charged with double-patenting and it was really only one invention --

THE COURT: But what can he say about that?

MR. JANICKE: He knows the configuration of the Northern Venture.

THE COURT: The configuration speaks for itself. What can he tell me about the configuration that will have the slightest effect on my decision as to whether the Venture I has a similar appearance with respect to the Stars or with respect to the R70? Those designs will speak for themselves. I can't imagine anything he can say in describing those designs, particularly without access to them, which is going to have the slightest influence on me.

MR. JANICKE: We don't have a Northern Electric headset or pictures of it or anything on hand.

THE COURT: This is not the best evidence, then.

gwb-4

Foley-direct
cross

1 I honestly believe that this is not the right way to
2 approach it. I think it is a waste of time as far as con-
3 vincing me about the fact that there is another design
4 which looks the same, but doesn't infringe the mechanical
5 patent. Eliciting testimony from him is no way to prove that.
6

7 MR. JANICKE: I have no further questions.

8 CROSS-EXAMINATION

9 BY MR. BRADLEY:

10 Q Mr. Foley, do you know how long Mr. Gaston Marchand
11 worked on the horn type prototype that you built and delivered
12 to him?

13 A Approximately three days to a week.

14 Q Do you know whether he did anything further with
15 it after that?

16 A NO, I do not.

17 THE COURT: He said he tested it and made a report
18 on it.

19 Q After the end of this three days or week, whatever
20 it is, did anybody else pursue the project, to your knowledge,
21 after that?

22 A To my knowledge, no.

23 Q You mentioned the circumaural type of headset which
24 was called the Roanwell Lightweight headset, is that
25 correct?

1 gwb-5 Foley-cross

2 A That's correct.

3 Q I refer you to Defendant's Exhibit D which con-
4 tains some of plaintiff's ads and sales flyers and I refer
5 you to what is called an ultra Lightweight headset and
6 ask you if that is what you would characterize as the
7 circumaural type of headset?

8 A That is a circumaural type headset.

9 Q This headset uses acoustic tube rather than a
10 boom mike, does it not?

11 A Yes.

12 Q I see that the weight of this is given as
13 from six to eight ounces. How did that weight compare with
14 the Lightweight headset of the circumaural type that you
15 worked on?

16 A It was eight ounces.

17 Q You testified about the output level of a head-
18 set changing and I am a little confused as to whether you
19 were talking about the changing as the end of the tube moves
20 away from the mouth or whether it changes because the voice
21 tube is lengthened or shortened.

22 THE COURT: He is using the two similarly. I
23 understand what he means. If you lengthen the tube without
24 changing the configuration otherwise, you move the orifice
25 at the end of the tube away from the mouth.

1 gwb-6 Foley-cross

2 MR. BRADLEY: Yes.

3 THE COURT: That is what you are talking about,
4 isn't it?

5 THE WITNESS: Yes.

6 Q In other words, for a given person, the tube
7 would have one length and be at the corner of the mouth and
8 for a different person it may have a different length and
9 be at the corner of his mouth, is that not correct?

10 A That's correct.

11 Q You weren't comparing those two situations, were
12 you?

13 A No, I was not.

14 Q You mentioned in the summer of 1969 you made
15 sketches of a behind the ear headset and I believe you said
16 that some had the voice tube under the ear and some had the
17 voice tube over the ear, is that correct?

18 A That's correct.

19 Q Is there any way you can fix the approximate date
20 to when this was done?

21 A Yes, I can.

22 Q When?

23 A It was just prior to us going on vacation,
24 which is in general the last week in July and the first in August.

25 Q So it would be approximately when?

1 A It would be the summertime. It would be the
2
3 June-July time period.

4 Q Do you know whether at that time you had seen
5 or known about the configuration of the Plantronic StarSet?

6 A I had not seen the configuration or any model of
7 the StarSet at that time.

8 Q Do you know whether others -- and I suggest you
9 don't say it unless you do know -- do you know whether others
10 at Roanwell knew about it at that time?

11 A I do not know that.

12 Q When you talk about a me-too product, sales wanted
13 a me-too product in terms of the Plantronic StarSet.

14 A That is correct.

15 Q Does the company ever make an produce and sell
16 a me-too product?

17 A No, they do not.

18 THE COURT: In other words, what you are saying
19 is you didn't satisfy the express desires of the sales depart-
20 ment?

21 THE WITNESS: That is correct.

22 Q And you mentioned the MS70 as being similar to the
23 StarSet, and I have here a StarSet headset. Do you see that?

24 A Yes.

25 Q And this is a MS70?

gwb-7a

Foley-cross

1

2

A R70.

3

MR. BRADLEY: I am getting my MS's and R's

4

mixed up.

End 6a

5

6

7

8

9

10

11

12

13

14

15

16

17

18

19

20

21

22

23

24

25

1 gwrf 6b am 1 Foley-cross

2 Q Is that correct?

3 A Yes.

4 Q Are these two the ones you say are similar?

5 A Yes.

6 Q How would you characterize this, which is an
7 R71? Is that similar or dissimilar?

8 A They are all similar headsets.

9 THE COURT: Two more but not me-too?

10 THE WITNESS: That is correct.

11 THE COURT: I thought you had defined me-too
12 as meaning similar. But let it pass.

13 Q Would you characterize me-too and similar as being
14 the same thing? Let me ask you it this way:

15 In terms of what sales was asking you for, what did
16 you understand them to mean?

17 A A copy of the StarSet.

18 Q Is that what you understood them to mean by
19 me-too?

20 A I would say yes.

21 THE COURT: A copy, an identical copy?

22 THE WITNESS: An identical copy, yes.

23 THE COURT: You thought that's what they really
24 wanted, an indistinguishable duplicate?

25 THE WITNESS: That's eventually what we made a

qwrif 2 Foley-cross

model of, yes.

Q You made a model of that at that time?

A Yes, we did.

Q Would you just explain that since you brought that up?

A It was a wooden model. It was an exact copy or as exact as we could get from some literature that marketing had obtained, and it was used for photographic purposes for a USITA show.

THE COURT: But you didn't go out and buy one of the StarSets on the market and use it instead of making this wooden model?

THE WITNESS: To the best of my knowledge,
there were none available at the time.

Q What did happen? Do you know who made that model?

A Our model shop made it under my direction.

Q Was it a working model or what you call a solid model?

A It was a solid wooden model.

Q Would you explain what was done?

A Well, a piece of literature was given to me to copy this particular headset and, as best I recall, there was something in the photograph, whether it was a pencil

1 gwrf 3

Foley-cross

2 or a coin or something that we knew the size of, and
3 then we projected that size up and obtained the shape of
4 that particular headset, and I sketched it up and gave it to
5 our model shop and they from that made a wooden model.

6 Q Is there any way you can fix the date when that was
7 done?

8 A Yes, I can.

9 Q How can you do that?

10 A It was done in August, late August, the end of
11 August. I had gone into Mr. Hans Mol's office, who was my
12 boss at that time, and I was showing off a little bit,
13 showing him the model we had made, and he just about bodily
14 threw me out of the room.

15 Q Why was that?

16 A Because there was a gentleman in the room named
17 William Novelli who I did not know at that time already
18 had resigned from Roanwell and was becoming a PPI, Pacific
19 Plantronics salesman.

20 Q When was he to leave the company?

21 A That was the end of August.

22 Q So the wooden model which was made at that time
23 was used for photographs and those were shown at the
24 USITA show?

25 A Yes.

1 gwrf 4

Foley-cross

2 Q In terms of this wooden model which I guess cer-
3 tainly would be a me-too, did the company ever market that
4 particular configuration or essentially a carbon copy
5 of it?

6 A No, we never did.

7 MR. BRADLEY: No further questions.

8 REDIRECT EXAMINATION

9 BY MR. JANICKE:

10 Q Mr. Foley, I show you Plaintiff's Exhibit 140,
11 which is a collection of deposition exhibits from the
12 deposition of Mr. Mol and in the document labeled F-537,
13 and they are now in F number order in the exhibit, is a
14 memorandum dated July 24, 1969, from Mr. Potter to Mr.
15 H. W. Clark.

16 Can you tell us what the positions of Mr. Potter
17 and Mr. Clark were on that date?

18 Can you tell us the positions of Mr. Clark and
19 Mr. Potter?

20 A I will tell you as best I understand it at that
21 point in time.

22 I think Mr. Potter was the general manager of
23 the corporation and Mr. Clark was the marketing manager.

24 Q Mr. Potter notes in his memorandum of July 24, 1969,
25

1 gwrf 5

Foley-redirect

2 to congratulate Mr. Clark on getting the first real concrete
3 information on Plantronics' new MS-50-80 behind-the-ear
4 headset.

5 THE COURT: What is his exhibit number?

6 MR. JANICKE: It is part of Exhibit 140, your
7 Honor. It is F-537.

8 THE COURT: I think I can find it if they are
9 in order.

10 MR. JANICKE: They are in F number order.
11 It is right behind the foldout.

12 THE COURT: I have it.

13 Q You will notice there are copy addressees of that
14 memorandum, Messrs. Howell, Anslow, Birdsall, Mol and Ennis.
15 Of those people, who did you have the closest contact with?

16 A With Mr. Mol.

17 Q And the memorandum describes the MS-50-80 headset
18 in the same terms or I will ask you is it in the same
19 terms as the brochure, also part of this memorandum, part
20 of the Exhibit 140, the brochure entitled, "Your personal
21 MS-50-80 headset"?

22 Would you compare the brochure and the memorandum.

23 MR. BRADLEY: Counsel, if it would help, I have
24 reviewed the brochure and it seems to me that what is in
25 the July 24th memo is in the same language.

1 gwrf 6

Foley-redirect

2 MR. JANICKE: If that can be stipulated we will
3 have no further questions.

4 THE COURT: All right. Consider it stipulated.

5 MR. JANICKE: Have you found the brochure, your
6 Honor? It is pasted in there?

7 THE COURT: Right behind the memorandum?

8 MR. JANICKE: No, it is several pages beyond.
9 It is near the back.

10 THE COURT: All right.

11 MR. JANICKE: I have no further questions.

12 THE COURT: Any recross?

13 RECROSS EXAMINATION

14 BY MR. BRADLEY:

15 Q I have one question as to whether the witness
16 knows whether the sketches are before or after the July
17 24th memo.

18 A The sketches were prior to that.

19 Q How do you know that?

20 A It was in, to the best I can recollect, in the
21 June period because I was doing a P.E.R.T. diagram of the
22 61-A program.

23 THE COURT: Which sketches are you talking about?

24 MR. BRADLEY: He had said he made some rough
25 sketches of headsets with over-the-ear and under-the-ear

1 gwrf 7

Foley-recross

2 voice tubes. I was just wondering how the dates related
3 to --

4 THE COURT: The sketches are not an exhibit.

5 MR. BRADLEY: And they are not in existence.

6 THE WITNESS: Also, I get three weeks' vacation.
7 When this memorandum came out, there was a good chance
8 I was on vacation because it was typically when Roanwell
9 closed down.

10 Q Well, do you know when you were on vacation that
11 year?

12 A I normally take the last in July and the first
13 two in August. I don't know how the dates would fall,
14 though, as far as what is the last and what is the first.

15 MR. JANICKE: I think the record should show our
16 first round discovery efforts requested all these sketches,
17 drawings and so forth to be produced and that Roanwell did
18 produce a large amount of material. Those sketches
19 apparently even as of 1972 were missing or gone.

20 THE COURT: All right.

21 MR. BRADLEY: There is no question but that we
22 produced all we had and the preliminary sketches were not in
23 existence at that time.

24 THE COURT: All right. Thank you.

25 (Witness excused.)

App. 403

MR. ARNOLD: I call Mr. Spragens, your Honor.

STEPHEN GERALD SPRAGENS,

called as a witness, being first duly sworn,

testified as follows:

DIRECT EXAMINATION

BY MR. ARNOLD:

Q With whom are you employed?

A Plantronics, Incorporated.

Q Are you acquainted with how many people -- how many people total were employed at Plantronics, Inc. the first of December 1961?

A Approximately four to five people.

Q When did you personally go to work for Plantronics? Or when did you receive your first job assignment from Plantronics?

A I did some preliminary work for Plantronics in January 1962. I had taken a leave from my then current employer, some vacation time, and then I officially came back in March of 1962.

Q Then beginning in March of 1962, what job did you have at Plantronics?

A I was product marketing manager initially.

Q Then were you promoted from that or what next job did you have?

2 A Director of marketing.

3 Q Then what next job?

4 A I became vice-president of marketing in 1966.

5 Q Had you been a vice-president in the marketing
6 area ever since 1966?

7 A Yes.

8 Q Had your entire career with Plantronics been
9 associated in the marketing area?

10 A Yes.

11 Q What were the responsibilities of your job in
12 terms of what information you were supposed to gather and
13 know about and handle, what were the responsibilities of
14 the job in the marketing department?

15 A Well, primarily to sell our products and perhaps
16 more importantly to understand the needs of the marketplace.

17 Q What do you mean by understand the needs of
18 the marketplace?

19 A Well, to go to customers or prospective customers
20 and expose our products, get their opinions of these
21 products and gain a good understanding of what the require-
22 ments for lightweight headset equipment were at that time.

23 Q Do you have an acquaintance with Keith Larkin,
24 the inventor of the patent in suit here?

25 A Yes.

Q What kind of man is he?

A Well, I would classify him as a very inventive man. Probably the epitome of the textbook entrepreneur.

Q Do you have an acquaintance with when the first substantial money was raised to develop and market the Larkin invention that is covered by the patent here, the MS-50?

A I believe it was May 1961.

Q Do you have any idea how much the unit of money was?

A Approximately \$300,000.

Q Was there another unit of money raised soon thereafter?

A I believe there was a rights offering for an additional \$100,000. I'm not sure what the time period was.

Q Have you information as to the financial status of the company as of March 29, 1963?

A Yes. It was desperate. I think it was \$7,000.

Q If I said about \$5,000 yesterday, I was in error by that amount?

A I'll buy that.

THE COURT: When you say the financial condition was \$7,000, what do you mean? The net worth?

THE WITNESS: Yes.

THE COURT: Or the total assets or what?

THE WITNESS: That's all the money we had left as far as cash was concerned.

THE COURT: You are talking about \$7,000 cash?

THE WITNESS: Yes, sir.

Q Do you know when Plantronics got into production with the MS-50?

A Yes. Prototypes existed in late 1961 but I think the actual production didn't get started until early '62.

Q And are you acquainted with what happened when Plantronics submitted the MS-50 to United Airlines?

A Yes, I am. The product was received quite well.

Q What happened when it was submitted to the Federal Aviation Administration?

A Well, we conducted various evaluations and certain modifications were made on the amplifier design to meet the impedance requirements that they had and a rather extensive comparative test was conducted at the Oakland Air Route Traffic Control Center in Oakland, California and as a result of this trial, we came out by far the winner of this evaluation and gained acceptance at that point by the FAA.

Q Were you also involved in the submission of the MS-50 to the National Aeronautics and Space Administration?

A Yes, I was.

1zrf 5

Spragens-direct

229

Q Would you relate that story. I don't believe that one has yet been told in the evidence.

A I think it was August 1962 I had a call from the NASA, Mercury program office in Houston indicating there was an interest in our MS-50 type headset and they didn't elaborate on what the interest was. I took the product to Houston and shortly thereafter found myself on an airplane to, I guess it was still Cape Canaveral in those days. I ended up talking to Captain Schirra, Wally Schirra.. This was prior to his Mercury flight, which I believe was the third of October 1962, and he expressed an interest in our lightweight headset for use within his helmet and the helmet microphones that we used at that time were the rather the large type that were positioned in front of the mouth and he referred to this as shrapnel.

His reaction was he would like to eliminate from in front of his mouth these microphones and because of the tube-type construction of our product, he was very interested to see if we could position this in his helmet.

This was a rather, it was a most exciting experience for me. I remember I worked, I think it was all night long to try to put the MS-50 type headset inside the helmet.

Of course, it was not configured for that use to

begin with and there were many problems, but after some help from NASA technicians we got the headset inside the helmet and it worked, it shouldn't have but it worked. It worked sufficiently for him to run some tests and he was satisfied that the concept made sense and he made the decision that he would like to use just the microphone only, rather than the microphone and the receiver and he asked me how soon I could be back with two MS-50 type microphones configured to go inside of his space helmet and I think it was something like 11 or 12 working days I was back with these units.

He tried them out, they worked quite well, he ran quite a few ground tests with them and I remember being very apprehensive because it suddenly dawned on me that he probably was going to use these in his flight in October and this was now sometime in September and I used to occasionally go to sleep at night and have horrible dreams.

I could see the headlines, a small California electronic firm aborts space mission and I finally suggested to him maybe he would like to use one of theirs and one of ours and one of someone else's. He said no, it would be two of one type or the other. He flew with these two microphones and we had some noise problems that were introduced at liftoff into the system but after he was

2 actually into space the transmissions from that flight were
3 considered to be the best that they had had to date. And
4 as a result of that we were able to go on continually
5 improving and refining the microphones. We stayed in the
6 program into the Gemini program, which was a two-man mission
7 for I believe one or two missions and then the subcon-
8 tractor, McDonald Aircraft, decided that they wanted to
9 reintroduce, I believe it was electrovoice microphones
10 which they did.

11 We were bumped off the program for approximately
12 two or three missions and NASA was not satisfied with the
13 results of the competitive mikes and we were then put back
14 on the program and we remained on the program all the way
15 through the Gemini and Apollo programs into Skylab.
16 I think we are one of the very few contractors probably
17 in the whole space program that went the full gamut from
18 Mercury to Skylab.

19 Q I think the record may be a little confused as
20 to which of these units were used in space, with the
21 complete MS-50 set and which were only part and we want to
22 be sure that's left clarified.

23 A That is a good point. I mentioned initially
24 that we configured the helmet microphones so actually
25 we then came back on the last Mercury flight which was

2 Gordon Cooper and we supplied not only the microphones
3 but receivers as well. We also supplied a lightweight
4 MS-50 type headset which was attached to an emergency
5 air sea rescue radio and then into the Gemini program we
6 were asked to make an MS-50 type headset which was worn when
7 the astronauts removed their space helmets, that is,
8 the microphones were fixed inside of the helmet and they
9 were then flying in what they call a shirtsleeve environment
10 or condition where they removed their helmets and they then
11 took an MS-50 type unit and put it on.

12 I say MS-50 type. It was configured to be noise
13 cancelling. It looked very much like the MS-50 type headset
14 that we have seen here but it had two transducers for
15 microphone and dual tubes to give a differential
16 effect that would allow it to be a noise cancelling microphone.

17 Q Was that noise cancelling microphone or MS-50 type
18 with the noise cancelling addition to it, was that the
19 only complete MS-50 type headset as you used the phrase
20 that was used in space?

21 A Well, except for the ones that they used on the
22 emergency radios, which were not actually used in space
23 but they were on the spacecraft.

24 Q Then what happened at NASA -- what else happened
25 at NASA?

1
2 A Simultaneously with introducing the unit to the
3 astronauts; I also visited the control center which at
4 that time was located at Cape Kennedy. This was the old
5 Mercury control center before the NASA flight group
6 moved to Houston and I introduced the MS-50 type there
7 to the flight controllers and they bought a small
8 quantity of these, I believe it was 50, which were used on
9 the flight of Gordon Cooper, which was the last Mercury
10 flight and after that additional quantities were purchased
11 and I think at this time we were considered the standard
12 headset within the mission control center at Houston.
13 They were used extensively throughout the NASA facility.

14 Q We have a stipulation that the MS-50 units have sold
15 more than 700,000 so I don't need to ask you further about
16 that and that the StarSet sales have exceeded, have reached
17 the rate of 210,000 per year.

18 Yesterday in my opening statement I used the
19 total figure on the StarSet. Do you know what the total
20 figure on StarSet sales have run to date?

21 A I'd say approximately 600,000 units.
22
23
24
25

1 Q And can you give us an indication as to the
2
3 average price of the StarSet?

4 A Average price for the StarSet in quantities
5 approximately \$55 per unit.

6 Q What percent of the total sales of all products
7 of every character sold by Plantronics prior to the initia-
8 tion of this suit were either the MS50 or the StarSet?

9 A Would you restate the question, please.

10 Q I am addressing my question to the portion of
11 the business of the plaintiff corporation that is tied up
12 in the subject matter of this lawsuit.

13 A Fine.

14 Q And I am saying that from the time Plantronics
15 began in business until the commencement of this lawsuit,
16 what per cent of its total sales of all products of *all*
17 characters were either the MS50 or the StarSet?

18 A Essentially 100 per cent. 99 per cent.

19 Q Now I direct your attention back to the circum-
20 stances of your first employment with Plantronics. Where
21 were you before you came to work for Plantronics?

22 A I was employed by Sylvania Electronics in Santa
23 Cruz, California.

24 Q How did it come about that you came to leave --
25 well, to get acquainted while at Sylvania with anybody at

1 zb-2

Spragens-direct

2 Plantronics?

3 A I was in the marketing group at Sylvania. At
4 that time that particular facility was what we call in the
5 trade a job shop. That is, we made products for other
6 people. We had an assembly facility. We had a machine shop,
7 a printed circuit capability and we were essentially selling
8 this facility in terms of its production capability to
9 various people in the Northern California area. People
10 like Lockheed Space Missiles, the radiation center, etc.

11 Messrs. Larkin and Graham came through the door
12 one day, I think it was in June 1961, and I ended up talking
13 to them and they indicated that they had an idea for a
14 lightweight headset and they were interested to know whether
15 or not Sylvania would manufacture this product for him.

16 And that is how I came to be acquainted with
17 them.

18 Q What did you do in response to their inquiry?

19 A I had been in the Air Force and had to use the
20 old heavy-type headsets like many of us have and I immed-
21 iately realized the value of this product and I had talked
22 to several people in my management at Sylvania to see if
23 they were interested in taking on this project and as is the
24 case sometimes with big companies, they couldn't see the
25 forest for the trees, their main concern was that I was

1 zb-3

Spragens-direct

2 probably talking to a couple of crackpot inventors, I was
3 probably going to get the company involved in a lawsuit
4 and I didn't necessarily agree with this and I maintained
5 my acquaintance with these two people and became more and
6 more interested in the product.

7 I took it to some contacts that I had in Los
8 Angeles in the aero-space industry. They reviewed the
9 product and thought it had a great deal of merit, and I became
10 more involved in this program and was actually offered a job
11 later on by Graham and Larkin, to help them sell the product.
12 This was after they had then made the decision themselves
13 in late 1961 to manufacture the product themselves.

14 Q Have you an acquaintance with the reputation of
15 small transducers with respect to fragility circa 1961?
16 The hearing aid type transducers that had already been on the
17 market for a number of years prior to then.

18 A Are you referring to the type of transducers that
19 are used in our headset?

20 Q Yes.

21 A Yes. There was quite a bit of concern on the
22 part of people that didn't really know our product or hadn't
23 used it. They would look at the product and because it
24 was small, they would conclude that it was fragile. Which
25 is a natural assumption, but the simple fact of the matter

zb-4

Spragens-direct

1 is that it is a very rugged device because the transducers
2 are shock-mounted in all three axes of the capsule and
3 it is quite a rugged device and I have resorted to some
4 sales tactics such as running an automobile over it and
5 throwing it out of windows and pounding it on people's desks.
6 It is quite a rugged device.

7
8 Q After you have thrown it out a window, pounded it
9 on a desk or run an automobile over it, have you literally
10 done each of those three things and then take the unit in and
11 the unit operated?

12 A Yes.

13 Q Do you feel there is any reality to the popular
14 conviction that these transducers were too fragile for use
15 in hadsets circa 19 --

16 A No. I think the last statistics I saw on
17 transducer failures, there were several million transducers in
18 the field, it was something at or less than one per cent.

19 Q Now I address your attention to the research and
20 development operations of Plantronics since it got under
21 way and got a product accepted in the market.

22 Has Plantronics continued any research and develop-
23 ment in other areas?

24 A Yes, we have a continuous ongoing headset
25 development program that is continually looking at ways to

1 zb-5

Spragens-direct

2 make our current product better, continually looking at
3 ways to make better headset products and recently we
4 have gotten into two other areas, in the telephone or tele-
5 communications field of one product that we are working
6 on is a video terminal device called the Comset --

7 THE COURT: What is the relevance of this?

8 MR. ARNOLD: Your Honor, I am well aware that
9 I do not have to explain the functioning of the patent system
10 to this Court. I feel I do to some of the Judges on the
11 Court of Appeals and I would like two minutes of background
12 on the nature of the patent system providing the R & D
13 money and what the R & D money does that the patent system
14 provides.

15 I ask for two minutes' leave to make my record
16 on this topic for the benefit of the Court of Appeals.

17 THE COURT: All right. I will give you that lee-
18 way.

19 Q Where did the money come from for these other
20 research projects?

21 A The money came from, essentially as a result of
22 our patents. That is, from the profit we made on our patented
23 product.

24 Q What is the amount of money that you have spent
25 on the amplifier research since Plantronics got into

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25

zb-6

Spragens-direct

239

business?

A On the headset amplifier, is that what you are referring to?

Q Any amplifier. I didn't know what the difference was.

A Specifically we had a rather extensive program where we have taken the amplifier that is used in the headset, StarSet headset and we put it onto a chip, as we say in the trade, it is an integrated circuit chip and I don't know the exact amount, but the figure that I recall, it is somewhere in the neighborhood of a million dollars we spent just developing that particular amplifier.

Q Now I would address your attention to the subject that has to do with the sales effort with respect to the patented subject matter and let's think in terms of the time frame up through the United Airlines, the Federal Aviation Administration and the NASA programs, which have all been discussed in the record.

Up to that time what if any was the nature of the advertising that was done of the Larkin MS50 set?

A Advertising was quite limited. Most of the money that we spent in the field of advertising was and still is to a great degree in the area of brochures and instruction booklets, this type of thing. We did some media advertising

1 zb-7 Spragens-direct

2 but by comparison it was fairly low, particularly in the
3 early days of the company.

4 Q Focus on the period through the United, FAA and
5 NASA programs, are you able to say whether or not you had
6 any media advertising prior to the adoption of the MS50 by
7 those three organizations?

8 A Very limited. Very limited.

9 Q By 1970, are you able to give us any idea as
10 of that time as to the total advertising budget for the MS50
11 the StarSet having just been brought onto the market at
12 the early part of 1970, I believe technically a few of them
13 last few days in 1969.

14 A My recollection would be somewhere in the area
15 of 3 per cent. 3 per cent of our sales.

16 Q At that time can you translate that into dollars
17 or into a comparison with the rest of the industry, if you
18 have any information on that?

19 A I think the standard for our type of business
20 in the electronics industry is generally regarded as around
21 5 per cent. Most companies would spend in the area probabl
22 of 5 to 7 per cent --

23 THE COURT: I don't believe that is the question.
24 The question was as of the time that the StarSet was intro-
25 duced, what did 3 per cent of the sales volume represent?

zb-8

Spragens-direct

THE WITNESS: Approximately 150,000, \$120,000.

Q Are you able to relate that at all back to, that is, the per cent of sales figure, are you able to relate that back to the advertising done by the industry as a whole, as a per cent of sales?

A Right. That was the point I got off on. I would say generally 5 per cent would be considered normal or nominal in our field.

Q What did Plantronics do with respect to the MS50 after theStarSet received customer acceptance?

A Well, the plan was to discontinue the product.

Q What happened to that plan?

A The product refused to die.

Q What do you mean by that?

A Well, simply that it was our intention to phase out the MS50-type headset and concentrate all of our production and sales energies on theStarSet headset. However, by that time we had achieved significant market penetration with the MS50-type headset and we found that we had built up a very large and enthusiastic user group. That for various reasons preferred the MS50-type headset to the StarSet and continued to buy the product as they still do today.

Q Now I would address you to the present status of the competitive market and ask you to consider all of the

zb-9

Spragens-direct

1 different manufacturers that are manufacturing substantially
2 different types of headsets and the number of different types
3 of headsets that are manufactured by all of them. I am
4 not talking about minor variations where somebody has a
5 little variation in the amplifier detail or the length of the
6 cord, but substantially different type headsets. How many
7 substantially different type headsets are currently being
8 offered to the same general type of market to which Plantronics
9 addresses its sets?

11 A To my knowledge there are four or five manu-
12 facturers, major manufacturers of headset in this country
13 and I would say that each manufacturer probably has four or
14 five major types of headsets that he markets and many varia-
15 tions of those, but four or five major types.

16 Q I would revert back to the MS43 headset. Are
17 you acquainted with the MS43 headset and the story on it at all?

18 A That was our original behind the ear unit?

19 Q Yes.

20 A I was not involved in any way in the development
21 of that headset but I am aware of it. I have seen it.

22 Q What happened to that headset?

23 A That headset was -- never got off the ground,
24 as we say. It was not a viable product.

25 MR. ARNOLD: I have no further questions.

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25

zb-10

243

THE COURT: Let's take our noon break now
unless you are going to have a very short cross-examination,
Mr. Bradley?

MR. BRADLEY: I won't be terribly long, but
I think it might be long enough to break.

THE COURT: All right.

We will recess then until two o'clock.

(Luncheon recess.)

1 STEPHEN GERALD SPRAGENS resumed

2
3 MR. ARNOLD: May it please the Court, as it
4 happens over the lunch hour, you find notes you didn't
5 cover. I asked Mr. Bradley if I could ask a few more
6 questions.

7 THE COURT: All right.

8 DIRECT EXAMINATION (continued)

9 BY MR. ARNOLD:

10 Q Prior to the advent of the StarSet in 1969, can
11 you tell us what per cent of the sales of the LarkinMS50 were
12 attributed to advertising and sales efforts by comparison
13 and what per cent of them were attributable to the merit of
14 the invention as found in the United Airlines, FAA and NASA
15 studies?

16 A That is a really difficult question to answer
17 because advertising is a nebulous thing. It is hard to pin-
18 point exactly how many sales were attributed to it. It
19 was quite low, in my estimate, and I would say in the neighbo-
20 hood of 10 to 15 per cent, probably no more than that.

21 Q After the StarSet, what happened to the advertis-
22 ing program for the MS50?

23 A It was essentially discontinued. There was some
24 minor advertising done to the aviation industry, but it was
25

gwb-2

Spragens-direct

CROSS

very limited.

Q Now I take you back to the period of 1961-'62, your work at Plantronics while the Larkin development was going on and also at that same period, '61-'62, the Roanwell Lightweight set development was going on. How would you characterize during that period the customer interest in the industry for Lightweight and avoidance of circumaural earpieces?

A I would say there was a very widespread demand for a lightweight headset and the demand I would characterize as being very strong.

MR. ARNOLD: No further questions.

CROSS-EXAMINATION

BY MR. BRADLEY:

Q Mr. Spragens, you are presently employed by Plantronics, right?

A That's correct.

Q What is your position there?

A Vice-president.

Q You are an officer of the company?

A I am.

Q You testified that you have been associated with the company since 1961?

A No, early 1962. My employment started in

gwb-3

Spragens-cross

March of 1962.

Q And prior to that time you worked for Sylvania?

A Yes.

Q Had you had any past experience in marketing headsets?

A No, not prior to Plantronics.

Q Do you recall whether in the year ending May 31, 1962, Plantronics showed a profit or loss?

A We showed a loss.

Q Do you recall approximately what the amount of the loss was?

A No, I don't. I am sorry.

Q Was the main product of the company the first four or five years principally the MS50 headset?

A Yes.

Q I show you a financial statement for the plaintiff it is an annual report, for 1963. I refer you to the first page inside the cover.

THE COURT: Does that have an exhibit number?

MR. BRADLEY: It is not an exhibit, your Honor. I didn't plan to put these in evidence.

Q I believe it indicates a loss for the year ending May 31, 1962.

A Yes, that's right, a loss of \$185,539.

1

2

THE COURT: It is \$188,000?

3

THE WITNESS: \$185,539 on sales of \$249,808.

End 1A

4

5

6

7

8

9

10

11

12

13

14

15

16

17

18

19

20

21

22

23

24

25

2 Q And that was for the year ending May 31, 1963,
3 that you read off, was it not?

4 A That's what it says, yes.

5 Q And the sentence below that, does that indicate
6 what the loss was for the year ending May 31, 1962?

7 A Yes. It says that these figures compare to a loss
8 of \$43,825 on sales of \$15,386 in the year ending May
9 31, 1962.

10 Q Do you recall whether there was a profit or loss
11 in the year ending May 31, 1964?

12 A I am not certain, but I believe it was about
13 that period, '64, that we had our first profitable year. I
14 am not certain.

15 Q I show the annual report for 1964 and I wonder if
16 that refreshes your recollection as to the net income,
17 profit or loss, for 1964?

18 A That indicates a profit of \$20305.

19 Q And do you recall whether in 1965 Plantronics
20 had a profit or loss?

21 A I believe every year after '64 we showed a profit.
22 I could be wrong about that.

23 Q Let me show you the annual report for 1965,
24 and see if that refreshes your recollection.

25 A I am wrong. We show a loss in '65 of \$136,849.

1
2 Yes.

3 Q You mentioned the headsets that were used by the
4 Astronauts and I am not sure whether I understood your
5 testimony as to Astronaut Cooper. There seems to be a
6 photograph showing Astronaut Cooper in Defendant's Exhibit D.
7 Do you see that?

8 A Yes.

9 Q It is on the same brochure that we have referred
10 to before pertaining to the MS-55 and 56.

11 Was that an ear tube type headset or earmuff type
12 headset?

13 A Well, there were muffs built inside of the helmet
14 actually made of this chamois material that was referred to
15 earlier today and our receivers clamped on the outside
16 of these muffs and piped the sound into the astronaut's
17 ear through a small opening.

18 Q Was there then a tube going through the earmuff
19 into the ear?

20 A Not a tube per se but an orifice. It was a
21 very short distance. The receiver is mounted on the back
22 side of the muff and then there was a threaded flange that
23 came in from the other side that had an orifice or hole
24 in it and that allowed the sound to come in from the
25 receiver capsule.

Q So there was no tube?

A No tube or ear insert device at all.

Q Do you know whether Plantronics was the first one to devise a headset using an acoustic tube with an earmuff or an earcap?

A I am not sure I understood the question. I'm sorry.

Q I am wondering whether this type of configuration was new at Plantronics where it used an earmuff or earcap with the acoustic voice tube, to your knowledge?

A To my knowledge, yes. We did that at NASA's request. It was the way they wanted it configured.

Q You mentioned the transducers in the MS-50 being shock mounted. Was the purpose of that to protect the transducers themselves from shock?

A Yes.

Q Do you know whether that shock mounting was present in the unit that Larkin built that was the unit disclosed in the patent in suit?

A I really don't. I'm sorry. I don't have any knowledge of the actual construction of that unit.

Q Do you know who was the one that did the shock mounting for the MS-50 unit?

A Well, a gentleman -- our original chief engineer,

1
2 I suppose, was the man who made the original shock mounts
3 that were used. The whole system of shock mounting has been
4 continually improved and modified in our headsets
5 through the years.

6 Q Do you yourself know? I am wondering whether it
7 was Plantronics that did it or some other company.

8 A No, I am fairly confident it was done by
9 Plantronics' engineers.

10 THE COURT: Are you saying that the MS-50 had
11 provision for shock mounts?

12 THE WITNESS: Yes, sir.

13 Q I am not sure from your answer whether you say
14 you know that it was done at Plantronics or you assume it
15 was. Do you know that to your own knowledge?

16 A I think the best thing to say is I am reasonably
17 confident it was done by Plantronics' engineers.
18
19
20
21
22
23
24
25

2 BY MR. BRADLEY:

3 Q I believe you mentioned as a result of the
4 Plantronics patents, you earned certain money and I'm not
5 sure I'll state it exactly the way you did, but something
6 to the effect to support other investment. What patents
7 are you referring to particularly?

8 A Well, primarily the Larkin Patent.

9 Q And what products are you referring to particularly?

10 A The MS-50 type headsets that were covered in that
11 patent.

12 Q Do you know what amount of money has been earned
13 in licensing under the Larkin Patent?

14 A The only license that I'm familiar with was one
15 that was let to an English company, S. G. Brown.

16 MR. ARNOLD: May it please the Court, I object to
17 the question as referring to a subject matter that the
18 Court has already ruled immaterial.

19 THE COURT: It isn't immaterial in the sense it
20 establishes that this witness doesn't know of any royalties
21 collected under the patents.

22 MR. BRADLEY: The witness testified on direct he
23 earned money through the patents. I am just trying to
24 explore that.

25 THE COURT: The question is permissible. Go ahead.

1
2 Q Is the same true of the "utchings Patents
3 in suit?

4 A Yes.

5 Q You mentioned relatively limited advertising and
6 we have just a few sample ads in Defendant's Exhibit D.
7 I refer you to one ad that is from September 6, 1963 issue
8 of Wall Street Journal. Do you recall that ad running?

9 A I don't recall the specific ad but it is certainly
10 an ad for our product.

11 Q Was it customary for Plantronics to run ads in
12 the Wall Street Journal, do you know?

13 A I would say it was not customary. There were
14 very few ads run in the Wall Street Journal to my knowledge.

15 Q My question should have indicated during this
16 period of time in 1963.

17 A I would say no.

18 Q You also mentioned that you are aware of the MS-43
19 development which was a behind-the-ear headset that Plantronics
20 made and I believe the voice tube came out the bottom,
21 is that correct?

22 A Right. To be sure I understand what you said,
23 I believe I said I was not familiar with the development
24 but I had seen the product and I was aware of what you were
25 referring to.

Q Yes, I understand that.

Are you aware of the fact that Plantronics was sued for patent infringement by Telex under the Flygstad Patent?

A Well --

MR. ARNOLD: May it please the Court, this, of course, is a fact but the pursuit of another lawsuit in this lawsuit, I do not see the relevance of.

MR. BRADLEY: I can withdraw that question, your Honor, and I want to ask him one other question.

THE COURT: Are you withdrawing it?

MR. BRADLEY: I will withdraw the question.

THE COURT: All right.

Q With regard to the MS-43 headset in response to interrogatories in another lawsuit which was the lawsuit of Telex against Pacific Plantronics, Mr. Graham, then the chief executive officer of Plantronics stated and I read the question, specify the dates of any alleged public use of the defendant's Model 43 headset.

And the answer, see defendant's answer to plaintiff's interrogatory No. 14. As presently advised defendant's public use of the MS-43 began in 1962 and continued for at least several years thereafter.

Do you know whether or not that is true?

1 A When you say continued use, to my knowledge we
2 didn't sell any MS-43s per se. So I would --

3 Q I think this is just referring to it in
4 patentese, its public use, it wouldn't have to be sales or
5 large use but it could be a public use of one or any number
6 like that. Do you know whether or not that is true?

7 A If you are saying that there was one in existence,
8 then it may have been used in the sense of something
9 that we had in the labor in the factory, I'd say
10 that is probably true.

11 Q I am specifically saying over a period of several
12 years beginning in 1962, do you know whether that is
13 true?

14 A Yes, I tried to answer it. I would say it is true
15 in that such a product existed during that period of time.
16 To my knowledge none was sold.

17 THE COURT: What product is this you are speaking
18 of, Mr. Bradley?

19 MR. BRADLEY: This is the plaintiff's MS-43
20 which was a behind-the-ear headset that was made in '62 with
21 an under-the-ear -- and it never was actually marketed,
22 as I understand, by the plaintiff.

23 Q Is that correct?

24 A That's my understanding.
25

THE COURT: What was the date of public use stated in that answer to interrogatory?

MR. BRADLEY: It stated it began in 1962 and continued for at least several years thereafter.

THE COURT: All right.

MR. BRADLEY: Near the end of Plaintiff's Exhibit 66, there is a good clear picture of the MS-43. Maybe if you would like to hand this copy to your Honor --

THE COURT: No, I can get it here. Thank you.

Q Mr. Spragens, the plaintiff has sold the StarSet with the behind-the-ear headset with an over-the-ear voice tube, is that correct?

A That is correct.

Q Has the plaintiff sold any behind-the ear headsets, whether the MS-43 or any other name, with an under-the-ear voice tube?

A Not to my knowledge.

Q Then you would not have any comparative figures, would you, on the sales between over-the-ear voice tube or under-the-ear voice tube?

A No.

MR. BRADLEY: I have no further questions.

THE COURT: Any redirect?

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25

lzrf 6

Spragens-redirect

256

REDIRECT EXAMINATION

BY MR. ARNOLD:

Q Mr. Spragens, if I recall your testimony, you were responsible for marketing and you advised us whether or not you would have known whether there were any significant sales of the under-the-ear MS-43?

A Yes, I should have been aware of that.

MR. ARNOLD: We have no further questions of this witness, your Honor.

THE COURT: Thank you, Mr. Spragens.

(Witness excused.)

1 zb-1
2 MR. ARNOLD: May it please the Court, during
3 this morning's testimony of Mr. Foley, he was asked questions
4 about the NorthernElectric Venture I unit, which was being
5 identified for purposes of illustrating that it was feasible
6 to make a boom microphone unit that would have a high re-
7 semblance, look like the design patent of the Hutchings
8 design. We don't have a complete unit, have not been
9 able to find one at this stage, but Roanwell has been kind
10 enough to offer us for purposes of identification to the Court
11 a partial unit which is broken in that the voice tube is --
12 excuse me, ear tube is removed.

13 It is not our property. We are still trying to
14 find another unit which we can offer in evidence. Counsel
15 has agreed that we could offer to the Court and we might
16 substitute a photograph if we might have leave to do so,
17 so we can have the record complete on the point.

18 THE COURT: Fine.

19 MR. ARNOLD: That is Plaintiff's Exhibit 141.

20 THE COURT: This unit is not in evidence, but
21 they are going to substitute a photograph for it, as I
22 understand you, and the photograph will be in evidence.

23 MR. ARNOLD: Yes, your Honor.

24 May it please the Court, Mr. Bradley indicates
25 he would like to recall Mr. Foley to the stand now that

1 this is here and other things that he has and cover that
2
3 subject matter while it is on our mind, and, of course, it is
4 our pleasure to have him do so.

5 THE COURT: All right.

6 MR. BRADLEY: If your Honor will recall, Mr.
7 Foley was explaining some of the similarities and differences
8 between the R70 and 71, and the R61.

9 J A M E S P . F O L E Y resumed.

10 CROSS-EXAMINATION (continued)

11 BY MR. BRADLEY:

12 Q We have simply sent over to Roanwell for samples
13 of these and they are samples that the cases can be opened
14 and I would just like to ask Mr. Foley whether you could
15 explain to the Court the point that he was making when he
16 didn't have these models. Do you recall what the question
17 was, Mr. Foley? I think you were explaining how the
18 R70 or the R71 is similar in some ways to the R61 or
19 different in some ways from it.

20 A Right. The 71 model utilizes the same speech
21 tube system and all the same parts as does the 61A. The
22 only difference in the retainer -- there are two little
23 tabs that stick up in the 61 and that retainer is the
24 strain relief for the cord set, but this complete system is
25 one and the same as in the 61.

zb-3

Foley-cross

1 Q You are saying "this complete system," and the
2
3 record does not know which one you are pointing to.

4 A That is, in the 61 the speech tube, the ferrule,
5 the socket, the transmitter boot and the transmitter are
6 all the same in both the 61A and the 71A.

7 The retainer that is in the 71A is similar to
8 the one we have in the 61A, the only difference is that the
9 61A has two tabs which are strain relief or the cordset.
10 The 71A has the same receiver boot and the same receiver as
11 is in the 61A.

12 THE COURT: You say the 71 or 71A?

13 THE WITNESS: The 71A.

14 Q You are mentioning 71 and 71A. Are these the
15 same thing? What is the significance of the subscript A?

16 A That is just model nomenclature that
17 Roanwell uses. They are the same.

18 Q When you say Model 71 or 71A, you are referring
19 to the same thing?

20 A Yes. Also the tube that goes over the ear, the
21 ferrule and the gasket that is inside of it is the same
22 ferrule and gasket that is used on the speech tube of the
23 61A.

24 Q You are again referring to the Model 71 or 71A,
25 is that correct?

1 A This is the 71A.

2 Q How does that compare with the Model 70?

3 A The 70 utilizes only the transmitter boot, the
4 transmitter, the receiver and the receiver boot that is
5 used in the 61. Everything else is different. Also let me
6 point out one thing. The plastic part of the tube is also
7 the same as in the 61.

8 Q The plastic part of the speech tube you are
9 referring to?

10 A Yes.

11 Q Is the same in the 70 as in the 61A?

12 A Right.

13 MR. BRADLEY: We will mark for identification,
14 since the other two are already in our exhibits, we will
15 mark the 61 as our exhibit -- it will be AAA.

16 Mr. Foley, the only other question I had was that
17 you have indicated a preference by sales or certain salesmen
18 and a preference by engineering or certain engineers.
19 Was the preference that was reflected by the sales people
20 unanimous and similarly, was the preference by the people in
21 engineering unanimous?

22 A No, it was not.

23 Q Would you explain that?

24 A As the program developed people developed dislikes
25

zb-5

Foley-cross

redirect

and likes. Both in the marketing department and the engineering department, there were people within each department that liked some features of the 70 and some liked features of the 71.

Q What did you personally like?

A I preferred the 70.

Q What do you presently personally like as between the two?

A I still prefer the 70.

Q Do some still prefer one or the other?

A Yes.

REDIRECT EXAMINATION

BY MR. JANICKE:

Q I have one question in view of our having located the Northern Electric Venture I. I think the operation of the set, were it complete, would be self-evident except for one point, and that is the metal tubing here on the voice side and the rectangular box on the bottom. Would you explain what those do?

A The rectangular box at the bottom is a noise canceling electret type microphone. The boom for tubing extends over the top of the ear and connects up with this microphone. The boom is made out of metal. It is one of the conductors used in transmitting from the microphone back to

App. 441

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25

zb-5

Foley-redirect
recross

262

the cordset.

Q Do you have a conduct~~or~~ going down through the tubing?

A Yes, there is an axial one going through the center.

MR.JANICKE: I have no further questions.

RE CROSS-EXAMINATION

BY MR. BRADLEY:

Q I have one question on Venture I. With that microphone out at the end of the boom, would you mistake this product for the Plantronics headset?

A With the microphone on the end of the boom?

End 2B

2 Q Yes.

3 A No, I wouldn't mistake it.

4 MR. BRADLEY: No further questions.

5 MR. JANICKE: Nothing further.

6 THE COURT: Thank you, Mr. Foley.

7 (Witness excused.)

8 MR. ARNOLD: May it please the Court, I direct
9 your attention to a chart we have prepared previously having
10 Larkin Claim 1 set forth and color-coded to each Larkin
11 drawing of the device and also to the R70.

12 This is the claim as to which originally there
13 was an admission of infringement and also an admission that
14 all of the elements of the claim were found in the accused
15 structure.

16 Subsequently there was a withdrawal of that ad-
17 mission and the withdrawal relates to only the one point in
18 brown as to which your Honor has already heard the testimony.
19 So I bring the exhibit to your attention by way of an
20 illustration of the point of their withdrawal of their
21 admissions of infringement.

22 The further point is in the patent drawing where
23 the clip was described it was on the back side of this
24 particular figure, so the clip that hooks over the glasses
25 member or the head bands member, as the case might be, is no

1 gwb-2

2 shown, whereas the hook that gets over the ear is shown, but
3 I think your Honor will understand from the patent drawing
4 what the significance of that is.

5 Under the circumstances that the rest of the
6 claim there is no controversy about, we think there is no
7 need for further testimony on the issue of infringement of
8 that claim.

9 I call Mr. Hans Mol.

10 THE COURT: You haven't made a similar chart to
11 show the application of the R70?

12 MR. ARNOLD: We have not made a similar chart.
13 Have we?

14 MR. JANICKE: We have.

15 THE COURT: I thought maybe you want to offer
16 it at the same time.

17 MR. ARNOLD: We don't have a similar color chart.
18 We have one in the book of exhibits. Maybe we should locate
19 what we do have.

20 MR. JANICKE: This is Exhibit 126 in your book,
21 your Honor, without colors.

22 MISS CLINTON: I don't think we do.

23 THE COURT: I don't believe it is necessary.
24 But I thought if you did have it, you might offer it now.

25 MR. ARNOLD: We do not have one on the R70. We

do not have another color chart.

H A N S C O R N E L I U S M O L, called as a witness
by the plaintiff, having been first duly sworn, was
examined and testified as follows:

DIRECT EXAMINATION BY

MR. ARNOLD:

MR. ARNOLD: First, your Honor, we would offer
in evidence as Plaintiff's Exhibit 142 the entirety of Mr.
Mol's deposition because we would like it received in evidence.
Mr. Mol was a witness that appeared on behalf of the corporation
when we noticed the deposition of the corporation
under the rules as noticing the deposition of Mr. Mol.
We noticed the deposition of the corporation and he was produced
as a witness who had the greatest knowledge of the subject
matter.

THE COURT: Then he at that time was an employee
of Roanwell?

MR. ARNOLD: He was a vice-president of Roanwell
which we will develop orally here in a few minutes.

THE COURT: All right.

MR. BRADLEY: I might mention at that time it is
my understanding he was not a corporate officer, but since
he was produced as indicated, it is admissible under the
Federal Rules, so we have no objection.

xxx

1 gwb-4 Mol-direct 266
2 (Plaintiff's Exhibit 142 was received in
3 evidence.)

4 THE COURT: Let me ask you, do you have a summary
5 of that examination?

6 MR. ARNOLD: We do not have a summary prepared for
7 introduction because of the various bits of background we
8 will elicit. I have a summary here, but I never did get
9 around to editing it for presentation.

10 THE COURT: All right. You can file it after
11 the trial is concluded and your opposition will have a chance
12 to file a counter statement.

13 MR. ARNOLD: All right.

14 Partly growing out of Mr. Mol's deposition, we
15 have first a major series of stipulated facts which I believe
16 that maybe I can review quickly for you to set the stage
17 for the rest of the testimony by addressing your attention
18 to the yellow book which is Plaintiff's Exhibit 141 and to
19 certain pages of that book.

20 THE COURT: You mean 140?

21 MR. ARNOLD: It is 140.

22 Page 1 of that book is a Roanwell brochure or a
23 flyer out of their DS Book.

24 Q Maybe, Mr. Mol, you can explain the DS book
25 to the Court better than I can. Would you explain what the

book is?

A I haven't got the foggiest idea what you are talking about.

Q Do you know what the DS book is at Roanwell?

A No, I am afraid I don't remember that terminology.

Q I will show you Page 1 of Exhibit 140 and I will direct your attention to the upper right-hand corner where there is a DS number assigned to the sheet. Can you tell us what that DS number means?

A No, I can't tell you what the DS number means. To the best of my knowledge, the numbering system for the brochures was assigned and handled by the marketing department. They may have been recorded in the engineering department, but I was never involved in that numbering system.

MR. ARNOLD: Your Honor, I think counsel will stipulate with me that these brochures and flyers, which are numbers 1 through 21, in the book, are various brochures and flyers which were pre-1961 publications by Roanwell.

MR. BRADLEY: Yes, we so stipulate. Your Honor, I indicated to counsel that we will stipulate that for the purpose of this suit. I am not absolutely sure that it is a fact and therefore I don't want to misrepresent anything to the Court. But for purposes of this suit we certainly stipulate that this can be accepted as a fact.

gwb-6

Mol-direct

MR. ARNOLD: It is our belief that this is so.

BY MR. ARNOLD:

Q Now directing your attention to Page 1, the first disclosure is of a unit which has, as you can see from a picture on the right, the microphone transducer located adjacent to the jaw in the right-hand corner and there is a boom that extends to the front of the mouth of the wearer, and we see it in larger figure on Page 1 and there are acoustic tubes inside this particular unit which convey the vibrations from the front of the mouth to the transducer which is adjacent the jaw of the wearer. This was one of the bits of art that was within Roanwell prior to the Larkin undertaking.

Then we see on Page 2 the dimensions of that tube set forth in the lower left-hand corner and depending upon how you measure the diagonal, it comes out in the four and a half inch order of magnitude that we have referred to as being happening to be the same length tube that Mr. Beranek's book used as his example of the sound in acoustic tubes. So we have in the Roanwell publications in their offering on the market a headset which did include acoustic tubes to the mouth prior to Larkin's development.

3A

1 gwrf 3b pm 1 Mol-direct

2 Then turning to page 4 we reach another one of
3 their brochures or flyers, or whatever these sheets are
4 called, and we noted in the first line of text the focus
5 on lightweight. This is the Model 52 that Roanwell made
6 and sold primarily for the telephone operators' market.
7 I don't know what page I said. It looks like a 7. We have
8 the Roanwell Model 52 displayed and the focus on lightweight
9 which shows that at that time they were at least
10 interested in lightweight.

11 We can follow over to page 9 as an example and
12 again in the first line of the second photograph we have
13 another model headset with the focus of lightweight still
14 shown.

15 Skipping on to page 13, we see in the 13,
16 14, 15 and so forth --

17 MR. BRADLEY: Would you mind if I put this in front
18 of the witness so he can follow?

19 MR. ARNOLD: Certainly. Happy to do so.

20 I will ledn you another copy to follow, so you
21 can follow as well.

22 13 is the page that shows the scope of the headset
23 market that Roanwell was in. 14 represents the different
24 types again. 15 represents many different types for
25 different markets. 16 continues to represent the different

1 gwrff 2

Mol-direct

2 types of headsets for different markets that Roanwell was
3 in. 17, 18 and 19 all continue to be representative of
4 that.

5 Also page 20, page 21.

6 It is up until that point we have the agreement
7 that those represent units at least that were offered on
8 the market prior to Mr. Larkin. In some instances we are
9 not dead sure about the date of the publication but we are
10 satisfied that the representation of units, it is that units
11 were offered on the market circa '61 and prior to Larkin.

12 MR. BRADLEY: We agree with that, your Honor.

13 MR. ARNOLD: Then we have on page 22 the special
14 advertising flyer that had to do with the lightweight head-
15 set that was contemporaneous with the Larkin development
16 with the featured language, "The headset you are wearing
17 weighs only eight ounces and it gives me more comfort."

18 The interesting point about this is we have already
19 in evidence the story that whereas the Larkin headsets
20 have sold at an average of about 100,000 units a year, the
21 Roanwell units, contemporaneously designed, has sold at an
22 average of 2,500 units a year and that reveals the difference
23 in the commercial impact of the two units contemporaneously
24 designed by competitors.

25 Then over on page 25 we have the listing of the

App. 450

2 different types of headsets and markets that Roanwell
3 was seeking to serve. They were seeking to serve
4 the defense headset market, they were seeking to serve the
5 industrial headset market, telephone operators, telephone
6 linemen, leak detector operators, mobile radio operators,
7 base station operators and then commercial markets for,
8 among other things, commercial jet pilots. They were
9 seeking to serve that market. Then on down, hobbyist
10 headsets and even special purpose headsets which we don't
11 have any accurate data as to the size of the market
12 for language laboratories or organ consoles or auditoriums
13 or home use but it is, of course, our position that those
14 specialized markets the Court can take judicial notice of
15 are of the same order of magnitude as airplanes.

16 In all of that they were seeking to get airplane
17 market by their own brochure proposals.

18 Then we turn to page 79.

19 BY MR. ARNOLD:

20 Q Can you turn to that page, Mr. Mol?

21 A Sure.

22 MR. BRADLEY: Counsel, I don't mean to interrupt,
23 but I would like to indicate for the record that my stipulation
24 as to these units being on the market did not carry over to
25 all of the other observations you made.

MR. ARNOLD: I understand.

Q Have you found page 97, please?

A 97?

Q Did I say it wrong?

A Yes.

Q I have 97. It is the letter of December 14, 1962.

A Yes, sir.

Q In the upper left-hand corner there is a name
Mr. D. W. Powers.

Are you able to tell us whether that was the
addressee or the writer of the letter?

THE COURT: What number is this you are looking at?

MR. ARNOLD: Page 97 of the exhibit, your Honor.

THE COURT: All right.

A Well, I can't tell you for a fact, but I think
common custom is that the top name is the addressee and the
bottom name is the writer. I assume that that was used in
this case. It is signed R. W. H. So it is obvious.

Q Who was Mr. Howell at that time?

A I don't want to weasel word out of this. This is
1962. I didn't join Roanwell until '69 and I am not sure
I have the exact organizational structure at that time. I
believe Mr. Howell was the president, Mr. Powers was vice-
president and at that time he may or may not have been director

1 of engineering. I don't know the exact date. You are
2 asking me something that I am not really familiar with.

3
4 MR. ARNOLD: Perhaps at this time I should go back
5 and commence your testimony and bring things up to date
6 before I try to go on with any of the other material that I
7 have outlined.

8 Q You have given us your name already, Mr. Mol.
9 Would you tell us your education, please?

10 A I have a Bachelor of Science in engineering from
11 the California Institute of Technology. I have done graduate
12 work in electronics at both UCLA and USC and have taken
13 advance management courses in Caltech.

14 Q After college, with whom was your first job?

15 A Shell Oil Company.

16 Q How long were you with Shell?

17 A Roughly five years, from '54 to '59, I believe.

18 Q Will you tell us the nature of your work at
19 Shell by the time you left?

20 A Basically it was a purely supervisory position.
21 I was responsible for supervising large groups of
22 essentially non-technical people. Although as an engineer
23 and drilling superintendent my decisions were largely in the
24 technical field it was in fact not a practical engineering
25 job.

1
2 Q I believe you indicated on your deposition, however,
3 that among the responsibilities you had some time along
4 the way, and maybe it wasn't right at the end of your tour,
5 that one of your jobs was the training of young engineers
6 out of school to undertake the engineering work for
7 Shell, is that correct?

8 A That is correct. A slight modifier. This was in
9 a fairly limited area called mud engineering which is
10 synonymous to some chemical engineering. It was an art
11 drilling --

12 THE COURT: You don't have to define it.

13 A I was the trainer for new engineers in drilling
14 mud, yes, sir.
15
16
17
18
19
20
21
22
23
24
25

2 Q You left Shell for what reason?

3 A I guess there were many reasons, one of them being
4 that I simply didn't want to continue in a nontechnical area,
5 that I was a technically trained person.

6 Q Where was your next employment?

7 A For about five years at a company which at that
8 time was called Giannini Control and later on changed its
9 name to Conrac Corporation.

10 Q Would you spell those two names for the report.

11 A G-i-a-n-n-i-n-i. It was G. M. Giannini
12 Corporation. Later on that corporation changed its name
13 to Conrac, C-o-n-r-a-c.

14 Q How long did you work for that company?

15 A Again, roughly five years. I recall it to be
16 1964.

17 Q What was the size and nature of the operations of
18 that company?

19 A The division that I was associated with was the
20 Transducer Division and we manufactured all types of
21 instrumentation for aircraft, accelerometers, pressure trans-
22 ducers, temperature transducers, air data transducers.
23 Pitot-static probes and angle of attack transducers.

24 Q And what was the nature of your particular
25 responsibility, were you involved in research or development

2 creativity of any kind or were you doing some routine
3 management work?

4 A It was a combination. My title was Product Manager
5 and as such I worked for the director of engineering but
6 associated with that duty was what was typically called the
7 P&L responsibility, the profit and loss responsibility for
8 a given product line.

9 Q Were you yourself involved in any degree of activity?

10 A Yes, I was.

11 Q Would you describe that to us?

12 A As supervisor of a group of engineers, we
13 had to respond to industry needs, requests for quote would
14 come in for a particular type of transducer, modification
15 thereof. I in essence contributed, I think, a fair amount
16 of the creative aspects of those proposals and helped
17 design some instruments as a result of it that were fairly
18 unique at the time.

19 Q How did your reputation for creativity, what kind
20 of a reputation for creativity did you have around the
21 company?

22 A Oh, I think it was fairly high. As I recall
23 I got the creativity of the year award or some such
24 pat on the back type thing.

25 Q I believe on your deposition you stated at page

2 22, "I became to be known as a highly creative designer
3 and did a lot of design work in those particular areas."

4 Is that consistent with your present recitation as
5 well?

6 A It sounds to me like it.

7 THE COURT: If I brought a negligence lawyer to
8 hear this case, they wouldn't believe it. Go ahead.

9 Q What was the most prominently used product that
10 you designed?

11 A Gee, you are asking me a question I can't recall
12 exactly. I think probably the most prominent product was
13 an angle of attack transducer that we originally sold on
14 the Boeing 707, 727. I guess 747. There are thousands
15 flying around the world every day.

16 Q I believe you indicate that virtually every jet
17 aircraft in the air has used your angle of attack design?

18 A From the fighter aircraft, the F-104 on, that is
19 correct. Prior to that, no.

20 MR. BRADLEY: I don't mean to object to counsel's
21 line of questioning but I'm not sure I see any relevance
22 to this suit.

23 THE COURT: Well, I suppose sooner or later
24 we are going to get around to the fact that with all his
25 creativity he didn't come up with the patented invention.

MR. ARNOLD: That's one of our points, your Honor.

THE COURT: I suppose it has a certain amount of conceivable relevance. Go ahead.

Q Did you at various times while at Giannini serve as project manager not only on the items already mentioned but on items ground support equipment, magnetic devices, sensors and pickups for potentiometer and temperature transducers?

A That is correct.

Q In the course of this work you supervised probably 40 people, some 20 engineers and 10 to 15 engineering aids and technicians. When was it that you supervised this group?

A I think continually. However, the type of personnel and the number of personnel changed depending on the particular project or the particular group I was supervising at the time.

Q Eventually you left Giannini after five years and where did you go then?

A I became a small part owner of a temperature transducer company in Santa Anna called Temtech.

Q What was the nature of your work there?

A We designed temperature transducers for the aerospace industry.

2 Q Let me go back just a minute to Giannini.
3 Before we left, I have a note here that some of the
4 contributions you made while at Giannini are still being
5 used in the industry many years later. Can you identify
6 them for us?

7 A Certainly the angle of attack transducer is being
8 used. An accelerometer, I think the model number was
9 24122 to my knowledge is still being used. Frankly I have
10 been gone so long from Giannini and that that particular
11 instrumentation industry is so volatile in terms of new
12 products that I think most of the other products by now have
13 probably been superseded in some fashion so I can't tell
14 you.

15 Q Let's return to after you left Giannini, what
16 did you do?

17 A I went to Temtech.

18 Q What happened at Temtech, what kind of work
19 did you do there?

20 A I was director of engineering or chief engineer
21 of a very small company. We tried to make a going business
22 out of the temperature transducers.

23 Q What did you try to make that?

24 A Temperature transducers.

25 Q How long were you there?

2 A Just a year.

3 Q Where did you go from there?

4 A I went to a company at that time called Endevco,
5 which subsequently was bought out by a company called
6 Becton, Dickinson, a large medical supply company, and we
7 became the electronics division of Becton, Dickinson and
8 I was chief engineer of that.

9 Q What is the company Digitran, a subsidiary of
10 Endevco, had you any acquaintance with that?

11 A It was a sister company. Both Endevco and Digitran
12 became in essence part of the electronics division.

13 Q You were then also the chief engineer of
14 Digitran?

15 A That is correct, sir.

16 Q And what kind of equipment did they manufacture?

17 A They are, I guess, the best known producers of
18 thumbwheel switches.

19 Q Also logic switches and logic circuitry?

20 A If you want to characterize them that way, yes, but
21 thumbwheel switches is what they are known for.

22 Q These words that I am using, they are your words
23 and I don't know what they mean.

24 A A thumbwheel switch is a logic switch. A logic
25 switch is not necessarily a thumbwheel switch. So my

1 attempt at clarification what a thumbwheel switch is,

2 I assume you don't know what it is. I used the word --

3 THE COURT: Is there any switch on earth that isn'
4 a logic switch?

5 THE WITNESS: Not that I know of.

6 THE COURT: All right.

7 Q You have mentioned work over the years in several
8 different fields of the transducer art. Will you tell me
9 whether transducer art as a whole have a major degree
10 of overlap or are they divided up into things that are
11 technologically separate so persons cannot move from one
12 art to another in the transducer art?

13 A I think in any engineering art as long as it
14 pertains to instrumentation there is a great amount of
15 transference. I think the basic fundamentals that one
16 learns in physics in college in a good engineering
17 school I think are applicable in all of those fields.

18 The resonance of a transducer is very analagous
19 to the resonance of an acoustic pipe. Or to resonance of
20 an electrical circuit. Pressure waves in pressure transducers
21 and hydraulics are in many ways analagous to pressure waves
22 in pipes. I don't want to belabor the subject but yes, there
23 is a great amount of knowhow in material and techniques
24 and adaptability, et cetera, in all these fields.

25 Q All right, by the time you left Giannini, how big

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25

lzrf 8

Mol-direct

282

was the engineering department and what was its budget
and what was your role in it at that time?

THE COURT: I thought he said he supervised 40
people there or am I wrong?

THE WITNESS: Yes.

Q I used the wrong word when we went back to

Giannini. We are up now to Endevco.

A When I left Endevco, sir?

Q Yes.

A The Digitran Division, I believe, had roughly

330 people. I don't remember the number exactly, but

somewhat on that order. The engineering department I

believe was up to about the 40 people level. Kind of depend

ing on how you counted, whether you make quality control

part of engineering or not. It is in that order. It was

going, I believe, eight or nine million dollars a year. It

is so many years ago now.

Q How successful has that company been in its field?

A Extremely successful.

Q And your responsibility there was to develop new

products and methods for that company?

A Not directly, as director of engineering I was

responsible for the supervision of the day-to-day activities

as well as the quality control as well as the development

of new products.

Q Your testimony is to the effect that a major

portion of your responsibility was the development of new

products and methods. Is that still your testimony today?

A Yes, I think we might quibble about what the word

1 zb-2

Mol-direct

2 "major" means, but it was certainly a significant portion
3 of my responsibility.

4 Q You indicated during your testimony before that
5 probably 80 per cent of all of the business in the field
6 and 80 per cent of its product line was designed directly
7 under your direction.

8 A That is correct.

9 Q And this is the subject matter that you have
10 indicated was the subject matter wherein the company has
11 been so highly successful?

12 A Gee, would you phrase that some other way. I
13 don't think I understand what you said.

14 Q I thought you had indicated that the company had
15 been very highly successful with this subject matter that you
16 had designed.

17 A With the switches that I had designed?

18 Q With all of the things, whatever they were that
19 you designed.

20 A Yes. Yes.

21 Q All right. Did you have something to do with
22 a binary switch that converted to decimal switch inputs to
23 a binary signal without going through electronic logic?

24 A Yes, sir.

25 Q Were you perhaps an inventor of this subject matter

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25

zb-3

Mol-direct

285

A Yes, sir.

Q What about a device called a lever wheel switch?

A Yes, sir.

Q All right, eventually you left that company and in April of 1969, I believe it was, that you went to work for Roanwell, is that correct?

A That's correct.

Q When you went to work for Roanwell, was it at an increased salary?

A Yes.

Q What was your initial job?

A Director of engineering.

Q About how long did you hold that job before it changed?

A It did not change.

Q Were you not named vice-president within a few weeks of your reporting for duty there?

A Well, it was vice-president of the communications division. It was really nothing but a title change. When I was hired, it was understood that that title would come about because they were making some organizational changes. My pay, my status, my duties were no different.

Q That clarifies another point. You were vice-president of the communications division rather than vice-

1 zb-4 Mol-direct

2 president of the corporation?

3 A That's correct.

4 Q That clarifies that other point.

5 How many people did you supervise when you first
6 went to work for the Roanwell Communications Division?

7 A I would say it is on the order of 40 to 50.

8 Q And about how many of them were graduate engineers?

9 A Gee, I don't even remember some of the names.
10 There were a substantial number.

11 Q Well, let's start with Mr. Morrison. What was he?

12 A Yes, he was a graduate engineer.

13 Q What was your characterization of him in terms
14 of his experience in headsets?

15 A I think he was a very experienced -- I think he
16 was a very experienced transducer designer and certainly was
17 familiar with headsets.

18 Q And you testified before that he had a MS in
19 physics?

20 A To the best of my knowledge he has, yes.

21 Q And that Mr. Morrison was probably the expert
22 in the entire United States on building receivers?

23 A That is probably correct.

24 Q Do you know where he had prior experience before
25 going to work for --

1 zb-5

Mol-direct

2 A At Bell Laboratories.

3 Q The language you used before was that he knew
4 far more than virtually anybody in the country. I believe
5 that is the same thing I have already asked you.

6 THE COURT: That goes a little farther. He
7 knew far more than virtually anybody.

8 Q Then as to Mr. Foley, you indicated as to him
9 that he was extremely competent in the design of housings
10 for, and earcups for headsets, is that correct?

11 A Yes, I think that is correct.

12 Q Mr. Janicke indicates I still may not have given
13 the quote correctly, so I better read it from Page 67, Line
14 8 of the deposition.

15 "A I believe that Mr. Morrison in terms of conceptual
16 knowhow of headsets knew far more than virtually anybody in
17 the country."

18 Did you have any other graduate engineers that
19 you can now recall who worked at Roanwell?

20 A I think there was a fellow by the name of Bob
21 Devaney. There was a fellow who was going for his doctor's
22 degree in electronics. He was Turkish. His name escapes
23 me. We had a fellow by the name of Lech Poradowski.

24 Q Was there anybody there then or soon thereafter
25 who had a Ph.D.?

1 A Yes, there was a fellow whose name escapes me
2
3 who was going for his Ph.D. at Columbia in electrical engineer-
4 ing, who was there when I came there.

5 Q All right --

6 THE COURT: He is the Turkish fellow?

7 THE WITNESS: Yes.

8 Q Let me take you back because I see I skipped a
9 question I intended to ask you earlier to the period 1961-
10 1962. You at that time I believe were in the transducer
11 arts yourself?

12 A Yes. Probably.

13 Q Was the shock mounting of transducers or the
14 mounting of transducers so that they would not receive undue
15 shock, was that common practice whenever you had an applica-
16 tion of one where you didn't want it to get shocked?

17 A I would say very common.

18 Q So that was within the skill of the art in 1961?

19 A No question.

20 THE COURT: I remember the old broadcast micro-
21 phones that had springs.

22 THE WITNESS: That's right.

23 Q During the course of your deposition you were
24 asked whether after studying the Larkin patent for 20
25 minutes it was sufficiently complete in its disclosure such

1 zb-7

Mol-direct

2 that a man of ordinary skill in the art would be able to
3 build the unit he described. And you answered that in the
4 affirmative.

5 Is that still your testimony?

6 MR. BRADLEY: Counsel, I believe he studied all
7 of the patents in suit in 20 minutes.

8 MR. ARNOLD: You say what?

9 MR. BRADLEY: If you are referring to the deposi-
10 tion that was taken of Mr. Mol, I think he had 20 minutes to
11 look at all of the patents in suit. If I recall it.

12 MR. ARNOLD: I accept that correction.

13 Q In all events, I addressed your attention to the
14 Larkin patent as such. Is it not your testimony that an
15 ordinary man skilled in the art, upon reading the Larkin
16 patent, would be able to build the unit that he described
17 there?

18 A What time frame are you talking about, was it
19 my testimony or is it my testimony now?

20 Q Is it your view, as a matter of substance today
21 that any man of ordinary skill in the art of transducers and
22 headsets that used transducers could, upon reading the
23 disclosures of the Larkin patent, build the unit which Mr.
24 Larkin described?

25 A He could build a reasonable facsimile of the unit

zb-8

Mol-direct

that Mr. Larkin described, that's correct.

Q A reasonable facsimile that also would be operable?

A I think the question of operability is questionable.

Q On what grounds?

A We don't know the performance parameters that that particular headset has to meet, for one. And I can't by looking at the drawings decide whether the drawing gives sufficient detail to allow those performance parameters to be met.

I can't tell whether the mechanical detail design is of sufficient quality for the device to do its job. There are no specifications attached to this patent. There is no question in my mind that I could build a device that basically did what Mr. Larkin intended to do, although I can't judge how well it did the job.

MR. BRADLEY: Counsel, I am not sure what you point is, but if you want a stipulation on our part that the disclosure of the Larkin patent is sufficient to disclose an operative unit or someone skilled in the art can make an operative unit from it, we so stipulate.

MR. ARNOLD: Do I understand counsel that in terms of the completeness of disclosure under Section 112 of the Act, that all three patents may be considered to be

zb-9

Mol-direct

adequate disclosures?

THE COURT: I assume you mean the two utility patents?

MR. ARNOLD: Yes.

With respect to the two utility patents.

MR. BRADLEY: Yes. I don't think we are talking about the best mode of disclosures or any problems of the claims or that kind of thing, but as far as being enough in the patent disclosed to one skilled in the art, somebody that could make it from that, we so stipulate.

MR. ARNOLD: All right.

Q It seemed to me, Mr. Mol, to be -- well, that is argumentative with you. I won't try to go back into that.

Ind 4B

1
2 THE COURT: Let me ask you, Mr. Bradley, for
3 purposes of clarification, do I understand that you wouldn't
4 make any defense based on Section 112?

5 MR. BRADLEY: Your Honor, we have questioned
6 the claims and I think our question as to the claims is in
7 some way related to the way that they are asserted, and
8 depending on how that falls out in terms of how they are
9 asserted, we may continue to maintain that there is some lack
10 of clarity of the claims under Section 112.

11 As far as the disclosure goes, we won't raise any
12 defense.

13 THE COURT: So if there is a defense under 112
14 it will be directed to the alleged failure to particularly
15 point out and distinctly claim the alleged invention?

16 MR. BRADLEY: That is right, your Honor.

17 BY MR. ARNOLD:

18 Q Now I will direct your attention, Mr. Mol, to
19 a subject that has been touched on earlier but left -- wait.

20 THE COURT: For further clarification, Mr. Bradley,
21 do I understand it that you will make that Section 112 defense
22 only as to Claim 1 of the Larkin patent and not as to the
23 other utility patent?

24 MR. BRADLEY: We are presently asserting as to
25 both, your Honor.

1 gwb-2

Mol-direct

2 THE COURT: Can you tell me what is the basis
3 of the assertion with respect to the improvement patent?

4 MR. BRADLEY: The Hutchings patent?

5 THE COURT: Yes.

6 MR. BRADLEY: The claim that is now being asserted
7 I understand is Claim 1. That is not the one that is giving
8 us the main problem. Claims 5 to 7 we felt had a lack of
9 particularity and were misleading.

10 THE COURT: The plaintiff, as I understand it,
11 has bound itself to stand or fall on Claim 1 of each of
12 the two utility patents.

13 MR. BRADLEY: Limiting it to Claim 1, the only
14 problem we have in lack of clarity is a description of how
15 the thing is done in Claim 1 differs from the way it is done
16 in Claim 5 and we found that to be misleading.

17 THE COURT: Is that a lack of clarity in Claim 5
18 or in Claim 1?

19 MR. BRADLEY: That is our problem, too. We probably
20 will end up not asserting a defense as to Claim 1, your
21 Honor.

22 THE COURT: Your problem with respect to the
23 Larkin patent, as I understand it, has to do with the means
24 for supporting the microphone and receiver?

25 MR. BRADLEY: Yes, your Honor. It is basically

gwb-3

Mol-direct

the claim clauses involved in the question of infringement, and again the clarity is tied in with how that clause is said to be asserted.

THE COURT: All right.

Q Mr. Mol, apparently we on our side are not in total agreement as to how serious this point is so I will take a minute to address you to it.

Visualize a microphone immediately in front of the mouth as is normally worn on the 52, the Model 52, and the movement of that microphone one inch to the right, and by comparison visualize a voice tube as in either the StarSet or the Roanwell R70 or the Larkin MS50, a voice tube, and it is moved from the middle of the mouth to one inch to the side of the middle.

Is there a difference in how much falloff in transmission you get as between moving the microphone one inch to the side on the one hand and moving the voice tube one inch to the side on the other hand?

A The question may be over-simplified somewhat. There is a significant difference between a microphone which is noise-canceling or a microphone which is non-noise canceling.

Second, your question assumes that the microphone was to be worn directly in front of the operator's

2 mouth, which it was not. I don't believe the telephone
3 company ever recommended to any of its operators that the
4 microphone was worn directly in front of the mouth.

5 THE COURT: Consider the question as amended to
6 read movement from the corner of the mouth one inch farther
7 away from the mouth.

8 THE WITNESS: For a non-noise canceling micro-
9 phone, whether it is with the element here and a tube or the
10 element here, I don't think there is any significant differ-
11 ence.

12 THE COURT: With respect to a noise-canceling
13 microphone, if the movement is in the plane of the microphone
14 then there is no significant dropoff with a noise-canceling
15 microphone as compared to the dropoff you would get with a
16 non-noise canceling type, isn't that right?

17 THE WITNESS: I believe what you are saying is
18 correct.

19 THE COURT: You are maintaining the correct
20 orientation of the microphone with respect to the mouth?

21 THE WITNESS: Yes, but I have seen in the litera-
22 and I am not an acoustics expert, but I know Bell Labs
23 has done quite a bit of plotting of pressure isobars, if
24 you want to call it that way, around the mouth and the
25 movement from the idealized point is different whether you

1 gwb-5

Mol-direct

2 go up and down or sideways in front of the mouth. So
3 it is a rather over-simplified question.

4 But there is very little difference as long as
5 you have a non-noise canceling microphone which certainly
6 as described in Larkin a simple tube is. I don't think
7 there is a significant difference between the two.

8 THE COURT: Or as long as the movement of the
9 noise-canceling microphone doesn't change its orientation
10 to the mouth?

11 THE WITNESS: I think that is basically true,
12 correct.

13 Q Now I will address your attention to the subject
14 matter that was going on at Roanwell upon the occasion of
15 your arrival in April of 1969. What were the foci of
16 engineering attention, foci of attention of the engineering
17 department, at the time that you assumed your position at
18 Roanwell in April of 1969?

19 A The biggest activity was largely due to us receiving
20 the 61A contract from Bell Labs and the problems associated
21 with putting that particular headset into production.

22 We had made some very tight money as well as
23 delivery promises and we were trying to do the best job we
24 possibly could in satisfying the Bell System on the microphone,
25 the whole headset which they had designed.

1 gwb-6 Mol-direct 297
2 THE COURT: Excuse me. Is this a good time
3 for you to stop for the afternoon break?

4 MR. ARNOLD: It is an excellent time. I can
5 use this time to organize myself.

6 THE COURT: All right. Ten minutes.

7 MR. ARNOLD: May it please the Court, I was tryi
8 to develop in parallel time Mr. Mol's and Roanwell's partici-
9 pation in the transducer business until they got together
10 and I left out one letter prior to Mr. Mol's arrival at
11 Roanwell that I would address your attention to. This is
12 a letter at Page Number 97 of Exhibit 140. It is the one
13 I started on and didn't finish on. I would address your
14 attention to that letter from Mr. Howell, then president of
15 the company, to Mr. Powers, and would point out that the
16 writing, handwriting, on that letter was in the copy as
17 presented to us by counsel, and thus the word "industry" is
18 corrected to read "interest" and so forth, and since that
19 lays part of the predicate for the attitude of the corpora-
20 tion Roanwell that I wish now to develop, I would request
21 that the Court read that letter before I proceed with the
22 next question.

23 THE COURT: All right.

24 (Pause.)
25

1 gwrf 5b pm 1 Mol-direct

2 THE COURT: All right.

3 MR. ARNOLD: May it please the Court, while you
4 were reading the letter, Mr. Bradley indicated that he wished
5 to ask Mr. Mol a question because he wanted to correct
6 an error he made earlier. I told him I would be glad to have
7 it corrected now rather than later.

8 MR. BRADLEY: Mr. Mol advised me at the break that
9 one of the answers he gave was incorrect and I suggested that
10 he correct it.

11 BY MR. ARNOLD:

12 Q Would you correct your answer that you feel was
13 incorrect?

14 A Yes. The answer that I gave was pertaining to
15 taking a small voice tube similar to the Larkin Patent
16 and positioning it near or in front of your mouth and the
17 relative effect it would have if you moved it in relation
18 to another microphone as in the 52 SW, I believe you gave
19 me an example. I gave you the answer they were substantially
20 the same.

21 However, I may inadvertently leave you with the
22 impression that in my opinion there is less affect with the
23 voice tube than there is with the large one. I want to
24 convey the exact opposite impresssion. In my experience,
25 and it has been known in the field, actually a larger

1 qwr 2

Mol-direct

2 microphone as it is held in front of the mouth and initially
3 moves away from the mouth has less of a pressure drop than
4 a very tiny probe.

5 A typical probe tube microphone as you have present
6 on the stand has a very predictable dropoff. The larger
7 microphone does not. So when I said they are substantially
8 the same, I did not want to leave you with the impression
9 that we are quibbling about numbers.

10 It is in fact the opposite way.

11 Q Were you speaking specifically to moving from
12 in front of the mouth to the side or were you speaking
13 from in front of the mouth in the direction out further from
14 the mouth or were you addressing yourself to either
15 of those or generically to both?

16 A Primarily from in front of the mouth and a little
17 farther to the front. Also from in front of the mouth to
18 somewhat more sideways.

19 When you get near the very corner of the mouth,
20 the very complicated pressure isobar system makes it
21 difficult to describe and I don't think I am qualified to
22 oversimplify it to that point.

23 You have to be very particular in describing the
24 kind of movement. In some cases the larger microphone would
25 show less effect and in some cases more effect, but by and
large from an idealized position would probably be less

1 gwrf 3 Mol-direct

2 or the difference due to a large microphone moving away
3 from the ideal position would be less than with a small
4 probe tube.

5 Q Let's address just one more thought on that.

6 I have noted that in the disclosure of the various
7 microphones where there was a boom microphone, the boom
8 microphone seems always to be positioned substantially
9 in front of the mouth, markedly different in most
10 instances from the end of the tube which is deliberately
11 positioned substantially to the side of the mouth.

12 Now, is there a relevance to that circumstance
13 in what you have just told me?

14 A I think, first, substantially in front of the mouth
15 I would not accept as being correct as in terms of the
16 center of the mouth. It is off to the side.

17 Q Off center but nevertheless front as distinguished
18 from the tube which is shown and used typically completely
19 to the side of the mouth, and it seems to me to be a
20 substantially difference in the two locations and I am in-
21 quiring as to what the significance is.

22 A The significance is that the type of headset we
23 are talking about here, the Larkin headset, has an
24 amplification in the microphone, and consequently, a slightly
25 lower level output can be accepted because you can in turn

1 amplify that output. Other microphones by and large have
2 been dynamic microphones and carbon microphones, particularly
3 a carbon microphone, and there you do not have the luxury
4 in many cases of amplifying the signal. Sometimes you do
5 and other times you don't.

6
7 THE COURT: I don't know what you mean you don't
8 have the luxury of amplifying the signal from a carbon
9 microphone. What do you mean by that?

10 THE WITNESS: In a telephone system you do not
11 have an amplifier which deliberately amplifies the output.

12 THE COURT: Maybe if you are talking from one
13 room to another but if you are talking from New York to
14 California, you have many amplifiers, don't you?

15 THE WITNESS: I think I am not qualified to answer
16 that but to my knowledge, no, there are not deliberate
17 amplifiers. There are repeaters.

18 THE COURT: A repeater makes up for the line loss.
19 We had testimony here in this case already that if you can
20 go from New York to California and lose three db,
21 they consider that par for the course.

22 THE WITNESS: Sure.

23 THE COURT: They can't do that without amplifica-
24 tion along the way --

25 THE WITNESS: That is correct.

1 THE COURT: -- with any system I know anything about

2 THE WITNESS: That is correct.

3 THE COURT: Then I don't get your point, that
4 you can't amplify the signal from a carbon microphone.

5 THE WITNESS: Well, sir, the telephone system that
6 you are akin to that an operator works into and that a
7 handset works into is common no matter what the input is,
8 and the telephone company has designed its system to be
9 basically compatible with a handset that is fairly closely
10 held for the large microphone.

11 THE COURT: But there is no reason why either
12 microphone couldn't be used with an amplifier built
13 into the headset or remote therefrom?

14 THE WITNESS: It could be, sir, absolutely, but
15 as a supplier to a telephone company I felt they have
16 a certain amount of sensitivity which they have prescribed
17 for me, whereas here I can do within reason anything I
18 want to to the microphone and offset that by upping
19 the gain on the amplifier. As a manufacturer, I have more
20 versatility than if I built the microphone alone. So I
21 think that is one of the causes of it.

22 Q Let us address ourselves to that subject one step
23 further. Apparently in terms of design concept the
24 tradeout was once thought to be such that we wanted to
25

1 gwrf 6

Mol-direct

303

2 use the kind of a microphone where we don't have to go to
3 an amplifier immediately and one of the things Larkin
4 did was to change that tradeout and say, "In order to get
5 other advantages, by jingo, I will use an amplifier and go
6 to that extra expense," is that one of the phenomena
7 that obviously occurred?

8 A Yes, I would say so.
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25

App. 483

1 1zrf 6a pm 1

Mol-direct

304

2 Q I would now address your attention to page 31 of
3 Plaintiff's Exhibit 140, the yellow volume, which is a letter
4 dated June 6, 1969 and entitled Discussion Outline
5 Strategy PPI."

6 Were you one of the copy addressees of that letter?
7 Or did you receive a copy of that memorandum?

8 A This is page 31, sir?

9 Q Page 31.

10 THE COURT: Before we leave page 97 again,
11 wasn't there something you wanted to ask him about that?

12 MR. ARNOLD: No, sir, he was not there at that
13 time. I wanted your Honor to be advised about it
14 because it lays predicate to the will and deliberateness
15 that we are going to go into now, but that letter was written
16 prior to the time Mr. Mol was there.

17 THE COURT: All right.

18 MR. ARNOLD: I think it relates to what we are
19 going to go into in terms of deliberateness of thought.

20 THE COURT: Now, what page are you speaking of?

21 MR. ARNOLD: We are now addressing ourselves to
22 page 31, which is Strategy PPI on June 6, 1969. A memorandum
23 from Mr. Potter to the file but it does address itself
24 to things that I'm wondering if Mr. Mol is not acquainted
25 with.

2 A I don't recall this letter nor do I really recall
3 the substance of that letter.

4 Q Do you remember the phrase second generation
5 headset being used by Mr. Potter in reference to the
6 Plantronics unit?

7 A I don't remember specifically but I think if he
8 had used that phrase, I would know what he meant.

9 Q In paragraph 4, there is a reference WE-61 design
10 is up in the air. Have you any familiarity with what was
11 the status of the WE-61 design being up in the air as of
12 June 6, 1969?

13 A I don't remember specifically. The design of the
14 61 was up in the air in many areas. Western Electric in '69
15 and '70 and '71 continually made changes in virtually
16 every aspect of the 61 headset. Amplifier, transducers,
17 capsules, colors, cordsets. There were so many design
18 faults, if you may, in that set that I can't specifically
19 recall what this would be with but I think there
20 is very little doubt that the design was up in the air
21 and was for a long period of time.

22 Q I will address you specifically to paragraph 4-A
23 because that's exactly the question I ask you right
24 now, how serious is the situation with what he asked then
25 and I ask you right now, how serious was the situation as

2 best you can tell it to us as of June 6, 1969?

3 A Well, the situation on the 61 was serious to us
4 because we were investing and had invested at that point
5 a considerable amount of energy and monies in trying to go
6 into production on the new headset and it was intended to
7 be for fairly large quantities.

8 We had, either had set up or were setting up
9 facilities to produce that headset. We were deliberately
10 trying to obtain personnel in manufacturing and quality
11 control capable of handling this size of contract.

12 And any stop or hold order by Western Electric to us
13 was vital because we were investing money and training
14 people with absolutely no assurance of when we could put
15 this to a productive use.

16 Q Then the next question is what is the likely
17 outcome and my question to you is, does not that inquiry
18 really relate back to the competition between the upcoming
19 MS-50-80 and the 61. The question what is the likely outcome.
20 You had given me a different story from what I expected
21 you to give but I will ask you is it not a fact
22 that you believe the question what is the likely outcome
23 was a question addressed to the competition between the
24 61 and the upcoming Model 50-80, as it was then called?

25 A Well, sir, I can see how you read that interpretation

2 into the question. I won't quibble that that is a very
3 possible interpretation.

4 However, as I read it, knowing the background
5 of the -- the context of the letter, the design being up
6 in the air, there is very little doubt in my mind what was
7 meant in this memo, although to my knowledge I was never the
8 addressee nor was I involved in this particular discussion.
9 The design being up in the air was our big problem.

10 Frankly, when could we get going on this contract.
11 That was our problem.

12 Q All right. We understand that position then.

13 The next portion of the letter, sources of informa-
14 tion, identifies customers, including Western Electric,
15 AT&T, Bell Telephone Laboratories and others, FAA,
16 NASA, ITT, quite a list of potential customers as
17 sources of information.

18 The next page lists the number of suppliers.
19 Knowles, I believe they make -- you were aware at that time
20 that Knowles was making transducers for Plantronics,
21 were you not?

22 A I had just gotten into the business but I have
23 no doubt that I knew, yes, sir.

24 Q Employees, engineers, salesmen, media, Santa
25 Cruz newspaper morgue. Now I would ask you, Mr. Mol,

2 do you know whether these various leads for information on
3 Plantronics, the home office in Santa Cruz, whether any of
4 these leads were followed up by anybody?

5 A No, I am looking over the list and I might volun-
6 teer that this list certainly here does not pertain to the
7 same question you asked me before. I think it is a different
8 context. But no, I am not familiar with any deliberate
9 attempt to get information, although they must have occurred.
10 I have no doubt that we tried to get it. I'm personally
11 not familiar with it except I believe a questioning of
12 Indianapolis Purchasing Department, I did take a trip sometime
13 in June '69, as I recall, to purchasing where the problem
14 was discussed, how big a problem is the announced new second
15 generation headset to the 61 A program. I do know that
16 question being asked.

17 Q All right. Now I will address your attention to
18 page 30, which is a memorandum from Mr. Potter to Mr.
19 Birdsall.

20 Can you explain to us who Mr. Birdsall is?

21 A Mr. Birdsall was -- I don't know his exact title
22 but he was in charge of manufacturing.

23 Q All right, and this letter is dated June 20, 1969
24 with an open copy to Mr. Clark, Mr. Ennis and to you and
25 it makes reference to three different Plantronics or three

2 different MS-50 sets.

3 Have you any information about any of those three
4 sets, where they came from, what was done with them, what
5 examination was given to them? I address your attention
6 to the first one. A recently obtained Plantronics MS-50
7 featherweight headset.

8 Have you any information about that?

9 A I think what was meant with that was a MS-50 of fair
10 recent vintage. What the word "featherweight" applies to
11 I don't know.

12 Q My focus is not on that but on what did the
13 corporation Roanwell do with its competitive MS-50
14 that it had recently acquired on June 20, 1969?

15 A He is returning it to the director of manufacturing.
16 I don't know for what purpose but I think it was our prac-
17 tice to file competitive headsets and to analyze them.

18 Q It is your belief, then, that you had analyzed,
19 then, sometime circa June 20, 1969 a recently obtained
20 Plantronics MS-50 headset?

21 A I don't think I can draw that conclusion. I
22 can assure you that we analyzed an MS-50 headset. All
23 this memo says he is returning it to the fellow. For all
24 I know, the analysis may have taken place a year before
25 that.

2 Q The next one recites an older MS-50 headset which
3 was apparently manufactured about five years ago. I
4 gather from your testimony that you don't know whether or
5 not that one was analyzed either?

6 A I don't know. I wasn't there. I never analyzed
7 it nor had any of my people analyzed it. I have
8 very little doubt it was analyzed.

9 Q The next one is a Roanwell designed telephone
10 operator's headset similar to the Plantronics MS-50. In
11 all of our efforts we have been yet unable to find a speci-
12 men of the Roanwell design telephone operator's headset
13 similar to the Plantronics MS-50. At least I am not aware
14 of that unit.

15 Can you tell me anything about that unit?

16 A It is strictly hearsay. I have not seen that
17 unit. It was described to me that some years
18 previously to '69, I don't know how many years, Roanwell
19 at one time investigated and made a mockup. I don't know
20 whether they contained working transducers or not, of
21 an operator's headset that had about the same size and
22 shape as the MS-50. I think there had been some initial
23 exploration in terms of what the tooling cost would be but
24 beyond it I don't believe I have ever seen that headset
25 and it was strictly described to me.

Q Sometimes that happens. They get lost in the archives in a company and we can't find it. All right, I address your attention next to page 53 and ask you if you are able to identify the author of that memorandum entitled Intelligence Re PPI, and I don't see any date on it other than the reference, target June 30, '69.

Are you able to identify the author of that by handwriting or otherwise?

A Yes, that's Mr. Potter's handwriting.

Q Are you able to identify which year that was written by virtue of the subject matter that is recited in it?

A I have no doubt it was 1969, target June 30th, yes I'm sure 1969.

MR. BRADLEY: We will so stipulate.

MR. ARNOLD: Thank you.

Q The objective that is recited here is detailed description of PPI's new second generation Lightweight headset referred to in the third quarter report and I am now trying to identify the third quarter report disclosure so that we can -- it is Page 58 to 60 of this same volume. I have it noted here in red ink.

MR. BRADLEY: Counsel, I think the record might reflect when you refer to second generation, both here and in the other instance, it is quoted and it refers to a report.

MR. ARNOLD: I am happy to have that pointed out.

MR. BRADLEY: The words "second generation" have quotes around them.

Q I notice the third quarter report was published July 7, 1969. I have characterized that as the third quarter report, but the dates don't jibe on it. Do you have an explanation for the circumstances that the report, at least was -- it appears on Page 59, to have been printed July 7, 1969, and this memorandum making reference to the third quarter report appears to set a target date of June 30, 1969?

MR. BRADLEY: Your Honor, I am not sure how the witness can explain the dates.

THE COURT: I don't know either. I note that Plantronics was operating on a fiscal year ending

1 zb-2
2 May 31, 1969. The third quarter would therefore have
3 ended, I suppose, in February 28, 1969.

4 MR. ARNOLD: Your Honor, I stand corrected by
5 my counsel in another regard. Apparently the item which
6 is on Pages 58 and 59 is not the official third quarter report
7 but is another special message, so I am referring to the wrong
8 document apparently.

9 Q In all events we got information prior to June
10 30, 1969, from somewhere and I don't have the identification
11 apparently of specifically what that third quarter report was.
12 There is a special reference, then, about three lines down
13 to the things we want to learn about, including types of
14 transducers and suppliers.

15 Why would that be of interest?

16 A The reason, as best as I recall, when I joined
17 Roanwell and got in communication with Bell Labs and Western
18 Electric on the 61A, there were comments made by them that
19 they -- one of the reasons they designed the 61A transducer
20 at Bell Labs themselves is because Bell Labs felt very strongly
21 that the transducers available up to that point were not
22 rugged enough, I want to clarify, this is information I
23 received from Bell Lab's engineers. This is not an opinion
24 on my part and certainly in that time period I had no opinion.

25 Q But you were specially interested, then, in what

1 zb-3 Mol-direct

2 type of transducer Plantronics was using in its new set, right?

3 A Yes, I think that would be a fair statement.

4 Q This relates, you will see in a minute so you can
5 know where I am going, to the circumstances you ended up using
6 transducers that were just a mite larger than Plantronics'
7 transducers, is that not correct? The transducers you put in
8 your R70 and R71 are a mite larger than the transducers used
9 by Plantronics transducers in its StarSet.

10 A If you define a mite for me.

11 Q You tell me.

12 A I think the thickness of the transducer including
13 its boot and its isolation structure I think is roughly
14 double the thickness and I think the area overall of the thing
15 is probably 50 per cent larger. It is not a mite by my
16 interpretation of mite. It is for a miniature device, a
17 substantially larger transducer.

18 THE COURT: Which is larger?

19 THE WITNESS: The transducer which was in the
20 61A.

21 Q Let me be sure we got it straight. The
22 transducer used in the Roanwell accused structure 70 and in the
23 accused structure 71A, both of those transducers are on the
24 order of magnitude twice as big as the transducers used
25 in the Plantronics StarSet, is that correct?

1 zb-4 Mol-direct

2 A I believe that to be accurate. I believe we can
3 measure them easily enough.

4 Q I am happy to measure them. I want a rough
5 order of magnitude as to size.

6 A Yes.

7 Q On this same letter it says assignment, HCM, that
8 is Mr. Mol, yourself, is it?

9 A Yes, sir.

10 Q It says interview engineer. What was the nature
11 of that assignment?

12 A Well, I had come from California and we were
13 interested first of all in obtaining additional transducer de-
14 sign capability because one of the problems that we had was
15 building this small 61A transducer. So one of the assignmen-
16 I had previous was to find out if I could attract any kind of
17 engineering talent with the kind of experience we needed
18 to produce the 61A contract. Which I did.

19 Q And the man that you tried to contact or did
20 contact, in fact, was who and with what company?

21 A Mr. Bernardi at PPI.

22 Q And this Mr. Bernardi was an engineer working
23 for Plantronics at the time?

24 A That is correct.

25 Q Was it not also true that though it was not you

1 zb-5

Mol-direct

2 personally, that Roanwell caused a call to be made to Mr.
3 Hutchings to inquire as to whether he would then leave
4 Plantronics and come to work for Roanwell?

5 A I don't know that, sir. I didn't make the call
6 and I was not aware of the call. In fact I didn't even
7 know of the existence of Mr. Hutchings.

8 Q All right. I will address your attention next
9 to Page 54 where there is a note which I take it to be yours
10 in your own handwriting signed by you and among the bits of
11 information that we find there is, Bernardi got talked to,
12 "don't," -- I guess that is supposed to be don't want to
13 pursue. Confirm, but no transducer design, so one of the things
14 you learned from Mr. Bernardi at this time was Plantronics
15 was not producing its own transducer, is that correct?

16 A That's correct.

17 THE COURT: What page is this you are reading
18 from?

19 MR. ARNOLD: Page 54, your Honor.

20 THE COURT: Thank you.

21 Q And then the note goes on, but is working, I
22 take it that means Plantronics is working on noise canceling
23 tube.

24 A Well, he is working, which obviously implies
25 Plantronics.

1 zb-6

Mol-direct

2 Q Apparently there was also conversation, since
3 he was not willing to accept the job offer that you tendered
4 about another man and you followed up on that, is that
5 correct?

6 A That's correct.

7 Q Now I address your attention to Page 55 of the
8 exhibit, which is another letter --

9 A I would like to amplify that I did contact a new
10 prospect and did investigate whether or not he would be inter-
11 ested in coming to work for us. He had no relationship to
12 PPI.

13 Q Did you talk to anybody else other than the PPI
14 man, Mr. Bernardi, and the one that Mr. Bernardi referred you
15 to?

16 A Yes. I don't recall the names of the fellows.
17 There was one fellow that worked at Shure Brothers in Chicago.
18 And I talked to an old colleague of mine who turned out to
19 not have had the experience that I thought he did in micro-
20 phones.

21 Q Let's proceed then to June 24. I am trying
22 to go through these in chronological order, which is why --
23 the book, unfortunately, is not in chronological order,
24 but in the order of our originally having them produced,
25 but we now have Page 55. Page 55, a letter of July 24, 1969

1 zb-8

Mol-direct

2 A I don't know if everybody was supposed to be
3 looking for that, but I have no doubt that Mr. Clark was
4 supposed to be looking for it and I think he did a good job
5 so he got congratulated.

6 Q The second sentence I believe refers to the letter
7 which appears in the exhibit at Page 57. I will ask you to
8 read the second sentence and tell us whether you can identify
9 that reference as being to the letter that appears at Page 57
10 of the exhibit.

11 A I am afraid you are going to have to ask that
12 again. I lost you somewhere.

13 Q I am asking whether the second sentence on Page 57
14 also relay my thanks to our friend in Chicago and let him
15 know that we will be happy to return the favor some day,
16 does that reference relate to the friend in Chicago whose
17 name appears on the Page 57 wherein there is a letter from
18 Plantronics to Mr. Gene Van Allen. Is that the friend in
19 Chicago, Mr. Gene Van Allen?

20 A I think your guess is as good as mine. I don't
21 know Mr. Allen. I have very little doubt that that is what
22 it refers to but I have no knowledge of it.

23 Q All right, I accept that. I believe that
24 it is of record or at least if not of record, should be made
25 of record, that the memorandum which is Pages 55 and 56, was

zb-9

Mol-direct

presented to us having attached to it also Page 57.

Do we have any difficulty with that?

MR. BRADLEY: I didn't quite hear what you said.

MR. ARNOLD: Do you have any difficulty with that?

MR. BRADLEY: I don't understand.

MR. ARNOLD: 55 and 56 was a letter sent to us having attached to it a letter, Page 57.

MR. BRADLEY: I am sure that this memo of July 24 refers to the letter of July 10.

End 6B

App. 500

MR. ARNOLD: All right. The memorandum of July 24 then discusses further down various questions that remain and it adopts language that is out of the brochure, Page 100. There is a brochure that appears on Page 100 of the exhibit and that brochure has been reproduced, your Honor, from the only one of these that we have, but in the form as attached to the letter and presented to us, there was a notation in the upper left-hand corner of the sheet, competitor's file, and in the right-hand corner there were four sets of initials.

HCP. I think Mr. HCP was Mr. Powers.

A No, that was Potter.

Q Potter. And HWC, who would that have been?

A That is Mr. Clark.

Q And RTE?

A Bob Ennis.

Q And the last one is HCM.

A That is me.

Q So that in context of approximately the date of July 24, 1969, it would appear that you, among others, received a copy of the pamphlet that is reproduced at Page 1 of the exhibit, is that correct?

A Yes, it would appear that way.

Q Let's relate that back to the vacation date

1 gwb-2

Mol-direct

2 that we have heard about, the vacation period that Mr.
3 Foley has testified about.

4 When was vacation this summer?

5 A I don't remember, but that vacation had very little
6 to do with my vacation.

7 Q I believe you testified that it was that very
8 vacation, the last week in July, that you and Mr. Morrison,
9 because no one else was around the plant, went down to a
10 place on 14th Street and tried to find some hearing aid cases.

11 A That's correct.

12 Q Tell us that story.

13 A What would you like to know?

14 Q I would use the phrase in reaction to this
15 letter.. You probably would quarrel with that. In any event -

16 A I don't quarrel.

17 Q -- what did you and Mr. Morrison do?

18 A You and I went down to a hearing aid place on
19 14th Street to try to buy as many hearing aid cases as we
20 could get a hold of in order to see what properties, what
21 shapes these hearing aid cases had because it was my assignment
22 to design a behind-the-ear headset and the first starting
23 point of a behind-the-ear headset is a hearing aid case.

24 Q Up to this time it had never occurred to you you
25 could mount anything behind the ear with an adequate stability

gwb-3

Mol-direct

1 such that with a tube sticking all the way in front of the
2 mouth the tube would stay there, is that a fair statement?

3 A That it had never occurred to me?

4 Q Up to that time it had not occurred to you that
5 it was feasible to mount a tube from a behind-the-ear
6 piece and have that tube be stably in front of the wearer's
7 mouth, adequately stable for use day by day of telephone
8 operators?
9

10 A The answer is I hadn't given it any thought what-
11 soever and when it was described to me to make a behind-the-
12 ear headset by putting an extension boom on the headset,
13 there simply was no question, it was so straightforward,
14 that it was very simple, that that was what was to be done.
15 I had not considered at that point stability or lack of
16 stability. I did not know about any instability. It is
17 simply I was given an assignment. I had been on the job for
18 two months. Somebody said Plantronics is building a behind-
19 the-ear headset and we started to lay out a hearing aid with
20 booms on it. It was verbally described to me as something
21 with a boom on. To me it was fairly elementary to proceed
22 on that basis.

23 Q I believe you just got through testifying that
24 it was not only verbally described to you, but that you
25 actually had received a copy of the brochure where you could

1 see a picture of it.

2
3 A Well, sir, I don't remember receiving that brochure
4 I will not deny it. I do not remember having received
5 that brochure. From the letter, from the addressee,
6 from whatever the indications are, I must have obtained it, but
7 frankly, at that particular point when we were spending
8 99 per cent of our activity trying to get a brand new headset
9 into production, the information that PPI had a behind-the-
10 ear one did not come as any tremendous revelation and I didn't
11 attach an awful lot of importance to it.

12 Q All right. Did Mr. Morrison, who also had been
13 in headset design for these many years and who was working
14 with you, as I understand it, in headset design work, did
15 he have any comment to make about this StarSet when it was
16 first disclosed? At this time it was still being called
17 the MS50-80, so let me use that designation because at that
18 time that is what was being used.

19 A Not at that time. Mr. Morrison had a generally
20 negative opinion about a hearing aid type of headset which
21 he had gained at Bell Laboratories. Whether it was wrong
22 or right, this was his feeling. His feeling about the Bell
23 System accepting a hearing aid type of headset just sent
24 him into convulsions, virtually.

25 Q All right. Now I address your attention to the

gwb-5

Mol-direct

fact that the letter at Page 28 -- excuse me -- I guess that is where I am up to -- yes, I address your attention to the letter at Page 28, which is the next item in date order that we have in this series of documents, and that letter is dated September 4.

Can you tell me what happened between the trip to the hearing aid place during the vacation period the last week of July of 1969 and September 4? There was a month in there. Do you know what happened?

A May I read this a moment?

Q Sure.

(Pause.)

A I think what happened during that period is that the engineering department pursued what problems were involved in building a behind-the-ear headset. The biggest problem that we basically faced, as we felt, was we were trying to design a headset that utilized virtually all of the Bell System components, that is, the transducers, the vibration isolators, speech tubes and what have you, and repackage that in a behind-the-ear version, obviously for economic reasons as well as a hope for acceptance by the Bell System that the components of their own design would be more desirable on their part than another design.

So since those transducers are larger, they

1 simply do not fit -- they are larger than a hearing aid
2 transducers -- they simply did not fit in a standard hearing
3 aid case and the problem was one of trying to put these trans-
4 ducers in some fashion in a hearing aid case that made a
5 perfectly acceptable, convenient, comfortable headset.
6

7 Q So in all events, by September 4 we had arrived at
8 the letter on Page 28 which sets up "Attentative schedule for
9 our work on the 70 series headset"?

10 That is the beginning of the second paragraph.

11 And then at the end it asks you -- this is a letter
12 from Mr. Potter to you -- it asks you: "Please review this
13 schedule which is attached against your manpower estimates
14 and let me know as soon as possible what you think can be done?"

15 Do you know what you responded in response to
16 that inquiry?

17 A Well, I think my response was or would have been
18 that a time frame of less than three months to build a unit
19 that required a plastic mold of our own design was a very
20 tight schedule and that we did not internally have the talent
21 in terms of manufacturing prototype plastic molds, we did
22 not have real production facility on plastic molded parts,
23 and that what we needed was outside help which would be able
24 to give us that capability.

End 7A 25

1 gwrf 7b pm 1

Mol-direct

2 Q All right. On the following page, No. 29, there
3 is a handwritten schedule which I take it to be the
4 schedule that was attached to the letter of page 28.

5 Is that a reasonable construction as you read the
6 two documents and know what went on?

7 A Yes, I think that's a fair statement.

8 Q That schedule, as you say, was a tight schedule
9 and it called for in the end six models submitted to
10 Schiavoni. Who was Mr. Schiavoni?

11 A I can't tell you his title. He was someone in-
12 volved at AT&T, Broadway. He was responsible for evaluating
13 products not designed by the Bell system for their
14 evaluation.

15 Q The point was he was your contact to try to get
16 the Bell system to adopt your unit and give it approval?

17 A He was Roanwell's contact, that's right.

18 Q Your target was to get to him a specimen unit by
19 12/15/69?

20 A That is correct.

21 Q Then let's turn next to page 62 where we have
22 a letter of September 26, 1969, and I will ask you to
23 explain that letter and what has gone on between September
24 4th and that date of September 26th.

25 A Well, I think on September 4th I probably

1 gwrif 2

Mol-direct

2 started looking around for some potential vendors and
3 I don't know the exact timeframe where it occurred but someone
4 which I believe to be Mr. Potter but could have been someone
5 else, remembered -- oh, I do. May I change this slightly?
6 I do remember contacting some people on the West Coast that
7 were plastic molders that I had had experience with to find
8 out if they could in fact do a plastic molding job for us
9 in this kind of a timeframe, and I got a generally negative
10 reaction because that time of year in the toy industry
11 is very busy and very few people have excess capacity.

12 Mr. Potter, I believe it was, remembered a visit
13 from Mr. Woodbridge of Unex and I don't remember the
14 exact context of that visit that had taken place half a
15 year, a year prior, but it basically boiled down that Unex
16 was a small hearing aid manufacturer who also had purchased
17 a plastic molding shop and had a machine shop facility,
18 and also offered engineering design services associated
19 with plastic molding.

20 Mr. Potter suggested that they might be a good
21 source to investigate as a potential aid in this program,
22 and we drove up to Unex in Hawthorne, Massachusetts, near
23 Boston, and sat down with him and explained that we had a
24 new headset we wanted to develop and that we wanted their
25 help both in terms of plastic molding as well as design

1 technology to help us get this program on the road, and they
2 basically agreed to do this. They were, I would say, fairly
3 hungry for business and they were anxious to take on this
4 type of business because it combined both their expertise
5 in manufacturing of hearing aids and transducers, tips, nips
6 as well as the plastic molding capability.
7

8 At that particular time, as I recall, we
9 hand wrote the letter up at Unex probably the previous day.
10 I don't really remember the exact day, in which we agreed
11 upon the rates, what to do and who should do what.

12 We either typed it up there or typed it back at
13 Roanwell and signed the letter. In other words, it was
14 some sort of a contract to do development work.

15 Q All right. Was your effort to get somebody
16 working an effort that could be called highly pressured
17 or, as I used the word in my opening statement, frantic
18 or something? What was the nature of that effort to get
19 somebody working on it?

20 A Frantic means disorganized. I don't think it
21 was disorganized but it was very high pressured.

22 Q I take the exception.

23 Is there any other word you want to correct?

24 A I don't want to nitpick. Frantic seems to mean
25 frantic activity. It was very high pressure.

MR. ARNOLD: On the September 4th letter on page 29 it says, the second sentence of the second paragraph:

"If we cannot do at least as well as shown on the schedule," -- which is the one with the December 15th completion date -- I believe we might as well forget trying to obtain Bell System and General System approval of our headset."

So that recitation by the author of that letter is in addition to Mr. Mol's testimony as to how much pressure there was.

Q Now, the letter of September 26th is the letter agreement that has to do with the work by Unex and it has enclosed with it page 64 as the exhibit, does it not? Page 64 is entitled "Design Objectives" and this is the attachment to the letter to Unex Laboratories and will you read to me outloud design objective number one.

A "The hoped for end objective is to build a headset which can be used by a PBX operator without requiring earmolds or any other device unique to the particular operator. The headset shall be usable by either male or female of normal size (90 per cent of population) either on the right or the left side of the head. The headset shall be attached without use of a headband, eyeglasses, et cetera."

MR. ARNOLD: The relevance of that, your Honor,

1
2 is the almost 100 per cent duplicity of the effort that
3 Mr. Hutchings undertook when he started to design the
4 StarSet.

5 Q Now I address your attention to page 1-A.
6 Apparently it is the very front of the exhibit. I will ask
7 you if you can identify that particular exhibit? This
8 is the brochure about which Mr. Foley testified where the
9 picture was taken of the wooden mockup.

10 A I can't identify it. I am sure I have seen it many
11 times but I can't contribute any more than that, sir.

12 Q This is also in evidence as Defendant's Exhibit
13 N-1. Maybe the point is that we have to identify that
14 through other witnesses because that apparently was prepared
15 by the marketing department rather than by your department
16 or at least some other department than yourself?

17 A Yes, sir, all brochures were prepared by the
18 marketing department.

19 Q I am not being very clear. The wooden mockup
20 that is referred to or that is pictured in that
21 drawing, do you know who made it or when?

22 A Well, I don't know for a fact that this was a wood
23 mockup but if it was, and I have very little doubt to accept
24 that, in all likelihood the physical activity on that wooden
25 mockup would have been done by members of the engineering

1 department. The model shop was under my direction in the
2 engineering department, and I have very little doubt that the
3 wooden mockup would have been made by the engineering
4 department.
5

6 Q I address your attention to page 51, which is a
7 photograph of the Roanwell booth at the USITA show and the
8 dates of that USITA show --

9 MR. ARNOLD: This is also in evidence as
10 Defendant's Exhibit N-2, which may be a little bit clearer
11 than the one we have, if your Honor would like to see it for
12 just a moment --

13 (Pause.)

14 MR. ARNOLD: I stand corrected.

15 The defendant's exhibits are not yet in
16 evidence. They have been marked. We are happy to have
17 these received in evidence, if you like.

18 THE COURT: I will receive them as a group.

19 Q So that the picture at the USITA show in October of
20 1969 included a picture of a Roanwell Model 70-A,
21 this same picture on the right-hand side there, as being the
22 one that is also pictured in page 1-A of Exhibit 140?

23 A I'd say so, yes.
24
25

2 Q I would address your attention next to page 61
3 of Exhibit 140 and ask you what that is?

4 A Well, it appears to be a layout, one of the original
5 layouts that we did I believe prior to going to Unex, which
6 basically used a hearing aid case shape and was modified
7 for both the thickness and cavity. It has no provision
8 for cord attachment that I can tell. It was an initial layout
9 as to how we might conceivably house the two standard Bell
10 Labs transducers in a hearing aid case.

11 Q And your testimony before about this particular
12 layout, which is identified as layout No. 2, your testimony
13 was that it contemplated the mouth tube coming out the bottom
14 and the ear tube coming out the top, is that not correct?

15 A Yes. No doubt about that.

16 Q I address your attention to layout No. 3 which
17 is at page 60 of the same exhibit and I will ask you what
18 that is?

19 A Well, I don't see the fine differences. It is
20 basically the same thing.

21 Q Layout No. 2 and layout No. 3, then, are fairly
22 similar layouts. They were both prepared immediately prior
23 to the September 26th contract with Unex?

24 A That's a fair guess, yes. I would say so.

25 Q And both of them show the voice tube out the bottom

2 and the ear tub out the top?

3 A That is correct.

4 Q This was true even though the disclosure of the
5 Plantronics MS-50-80, to which you were reacting at
6 this time, was of a mouth tube over the top?

7 MR. BRADLEY: I object, your Honor, to the question
8 as to what he was reacting to at the time.

9 MR. ARNOLD: I withdraw the question.

10 Q At that time you had had a disclosure that the
11 Plantronics tube, mouth tube came over the top but you
12 were now sketching a mouth tube out the bottom, right?

13 A I don't recall the disclosure. I have little
14 doubt that we had it. I believe I attached so little
15 importance to the Plantronics disclosure but the people
16 that did this work weren't even familiar with it. This
17 was not, these layouts were not done by me but people
18 working for me so I don't know what the reaction was, but yes,
19 both of these showed the microphone coming out the
20 bottom for obvious reasons.

21 Q I address your attention, then, to page 66 of
22 Exhibit 140 entitled "Initial Report," and this is the initial
23 report to Roanwell from Unex after the first week of
24 their work and it covers the period September 26th to
25 October 3rd. The first thing that I would note is the

people that are referred to there in the background paragraph, as a result of a meeting held on Friday September 26th between Mr. Woodbridge -- who is he?

A I think his title was executive vice-president of Unex.

Q And Mr. Nichols, who is he?

A He was president of Unex.

Q Was he also an experienced engineer in hearing aids?

A He was the engineer in hearing aids. Mr. Woodbridge was strictly financial.

Q Mr. Powers at that time was in what position with Roanwell?

A He was vice-president but in terms of his day to day activities, I know very little.

Q And Mr. Potter we have identified before. Mr. Mol. Mr. Deparis is a new name. Who is he?

A He is purchasing agent.

Q Mr. Morrison, I believe we have identified before. Mr. Kloek. Who is he?

A He is a designer that worked for us.

8B

1

zb-1

Mol-direct

2

Q In your prior deposition we discussed this meeting of September 26 and I think there might have been some confusion as to whether it was in that meeting or another, but is it not true that at about September 26, on or about, give or take a day or two in either direction, that all of the ideas that Roanwell had, all of the information that Roanwell had, including among other things the layouts 2 and 3, were disclosed to and discussed with the Unex people?

10

A Yes. We certainly didn't withhold anything from

11

Unex.

12

THE COURT: Mr. Arnold, how much longer are you

13

going to have with this witness?

14

MR. ARNOLD: I would suggest 20, 25 minutes, your

15

Honor.

16

THE COURT: Well, then I think probably we ought

17

to take our evening adjournment.

18

How are we going on our schedule? You had

19

estimated, I think, four days.

20

MR. JANICKE: I think we will finish probably

21

some time Thursday totally, your Honor. I think the plaintiff

22

will rest some time tomorrow. Defendant has indicated they

23

want to call their expert witness tomorrow morning regardless

24

and that is fine with us. I therefore think we will surely

25

be finished by Thursday afternoon.

zb-3

Mol-direct

between now and Thursday evening.

THE COURT: Do you think that will be enough?

MR. BRADLEY: I would like to say if the plaintiff will be finished by noon tomorrow, I would prefer that we go ahead and I think we can finish in one day, so I think we would be finished by noon break on Thursday.

THE COURT: If there is any doubt about it, I am perfectly willing to stay another 20, 25 minutes until you finish with your direct examination of this witness, although I would prefer not to because during every recess I have been going out to the robing room to work on an opinion in a three-Judge Court case involving the constitutionality of a New York State statute which prohibits sale of contraceptives to persons under the age of 16 and also prohibits sale through anybody other than a licensed pharmacist. And I am under great pressure to get that opinion out before the legislature adjourns so that they will have time to do something about the problem in case the statute is held unconstitutional. So I would, I would like to adjourn if we are going to be pretty sure of finishing Thursday.

MR. BRADLEY: I think we are pretty sure, your Honor.

THE COURT: All right.

(Adjourned to Wednesday, March 19, 1975, at
10:00 A.M.)

WITNESS INDEX

<u>Name</u>	<u>Direct</u>	<u>Cross</u>	<u>Redirect</u>	<u>Recross</u>
Frank Frederic Romanow (Resumed)		159	180	
James Peter Foley (Resumed)	185	214	221	223
Stephen Gerald Spragens	225	245	261	
Hans Cornelius Mol	265			

EXHIBIT INDEX

<u>Plaintiff</u>	<u>Identification</u>	<u>In Evidence</u>
140		155
142		266

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25

gwb-1

340

Plantronics, Inc.

vs.

72 Civ. 1625

Roanwell Corporation

New York, New York.
March 19, 1975 - 10:00 A.M.
Room 110

(Trial resumed)

THE COURT: Where do we stand?

MR. ARNOLD: We are in the middle of Mr. Mol's
testimony and we would recall Mr. Mol to the stand.

H A N S C O R N E L I U S M O L resumed.

DIRECT EXAMINATION (continued)

BY MR. ARNOLD:

Q I show you again Plaintiff's Exhibit 140, Mr. Mol,
so that you can follow several matters that are in that
exhibit, and direct your attention first to page 66 of that
exhibit.

At the conclusion of the testimony yesterday we
had identified the people referred to in the paragraph of
that report called "background."

I address your attention now to the sentence
appearing in the paragraph entitled "Initial study," which

App. 520

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25

gwb-2 Mol-direct 341
reads , "The initial Roanwell No. 2 and Roanwell No. 3
layouts for a 70 series headset provided good starting
design lacking only in details and minor refinements for a
possible product."

Now, I would ask you to elaborate, if you will,
on what is the meaning of that in terms of layout No. 2
and layout No. 3, were they lacking only in details to be
the ultimate product?

A I suppose that everything is a matter of degree
but, yes, I think the basic thinking had been done. It
appeared to be perfectly feasible and the rest of it was
straightforward engineering.

Q All right. I notice the starting point seems
to be layout No. 2 and we have not been able to develop lay
No. 1 in our search for documents.

Are you able to give us any indication as to
what was the nature of layout No. 1?

A I have absolutely no recollection what that was

Q I direct your attention, then, to Page 67,
which is one of the pages that accompanied the first
Roanwell initial report that began on Page 66, and particular
we will note that there are commentaries here pro and con
on different types of headsets. So apparently Unex is
still considering different types of headsets in spite of

1 the fact that layouts 2 and 3 seemed nearly complete.
2
3 Topic 1 was in the ear, Topic 2 top of the ear, but I am
4 a little confused as to the significance of top of the ear --
5 I guess that is what it is. Is that the way you read it?

6 A Yes, I would say top of the ear.

7 Q What is the nature of the disclosure? I
8 have difficulty understanding exactly what is intended in that
9 drawing.

10 A I am not sure what the drawing relates to,
11 whether that relates to 2 or whether that is a drawing that
12 relates to all of these. I think that drawing relates
13 to all five and it is just a drawing of the ear and shows
14 No. 1 position as being in the ear, No. 2 on top of the ear,
15 No. 3 the hearing aid type behind the ear style. In other
16 words, it merely points out the general area that we are
17 talking about.

18 Q So that the reference numerals on that drawing
19 are reference numerals which are addressed to ear locations
20 rather than to suggesting that the hearing aid transducer
21 be placed specifically anywhere, this is not a specific
22 disclosure of a hearing aid transducer on top of the ear of
23 any kind?

24 A Well, you are confusing me. First, I don't
25 understand the word "disclosure," but when you say transducer
do you mean the whole capsule including both of the transducer

1 qwrflb am 1 Mol-direct

2 O I think your point is well made. My question is
3 confusing to me so it should be to you.

4 To be specific, do you consider this to be a dis-
5 closure of the idea of putting the input tube from the mouth
6 on top of the ear or is this a general disclosure of posi-
7 tions of the ear?

8 A It is a general disclosure of positions of the
9 approximate capsule which includes the container. If you
10 want to use the word "disclosure" -- you seem to imply this
11 disclosure is an invention -- it is not a disclosure.

12 O I understand. I did not mean to imply an invention
13 disclosure. I was trying to say you would read this as a
14 disclosure of an over-the-ear input tube because of the phrase
15 "top of the ear" and I didn't read it that way.

16 A I agree with you. I think it is just a general
17 location of the headset.

18 O Then let's proceed to topic 3, hearing aid
19 behind the ear, comments on that: topic 4, low slung.

20 THE COURT: Excuse me. You keep referring to those
21 as topic 3 and topic 4. I interpret those as posi-
22 tion 3 and position 4 and those numbers are keyed
23 to the numbers on the diagram of the ear.

24 MR. ARNOLD: I think your Honor is entirely
25 correct. I think that is what they mean. That is what I

1 gwrf 2

Mol-direct

344

2 was trying to establish a while ago.

3 THE COURT: Consider it established.

4 Q Low slung is position 4 and at position 4 I am
5 finding under the pro column a recitation "Shorter input
6 tube."

7 What is the meaning of that expression as something
8 in the pro column, the "shorter input tube," being
9 important to low slung?

10 A Well, input I would guess would probably be either
11 a microphone or receiver tube. I don't know what the word
12 "input"tube means.

13 THE COURT: The receiver tube is an output tube,
14 isn't it, if you are talking about the thing that is stuck
15 into the ear?

16 THE WITNESS: Yes, it is very possible. I
17 think we used the words interchangeably, but I would guess
18 input in general would mean the input into the headsets.

19 Q In the work that Unex Lab was doing after they
20 had their extensive conversation with the Roanwell
21 people in which you shared with them all the thoughts you
22 had, they thought enough of the shorter input tube idea
23 to at least record it on the pro column?

24 A Well, it is No. 7 in the list, I know. It was
25 recorded but I don't think --

THE COURT: No. 7 in the list? In what list?

THE WITNESS: In the pro column under item 4, Mr. Arnold is calling my attention to the very bottom line of that list of seven items as being "shorter input tube," and he is saying they attached -- I forget your exact wording, but some real significance. It is No. 7 on the list. Yes, they obviously recorded it.

Q Now, a few lines up there there is a reference to no glasses problems, and I would address your attention to that phrase, "The low slung has no glasses problems," by comparison with position 2 where there is a recitation in the con column "Too thin for tight, small ears or use with glasses."

Will you explain to us the significance of those two expressions, one in the pro column and one in the con column?

A Well, I don't remember the exact conversation, but if I look at it today I would guess that is what they were pointing out, the more that capsul is going to the top of the ear, the more problems you have with location of glasses.

1 Q All right, I would address your attention now
2 to page 68, which is also a part of that same report from
3 Unex and there we have sketches of quite a number of
4 different potential designs. Do you feel that any of those
5 designs look enough like the R-70 to be viewed by the layman
6 as being substantially the same in appearance?
7

8 A I would say the picture next to item B is not a
9 very good approximation but it certainly is closer to the
10 70 than anything else on this page.

11 Q All right, I address your attention now to
12 Plaintiff's Exhibit 135-A where we have the drawings of the
13 Hutchings-design patent on the left and the Roanwell R-70
14 on the right and I would ask you whether it is not your
15 testimony that to the average layman at least whenever he
16 saw the Hutchings-design or the Roanwell design, he would
17 think they looked substantially the same in terms of
18 ornamental design?

19 A Well, ornamental design, I don't think there is
20 very much ornamental or any ornamental design. I think
21 they look like similar devices to laymen.

22 In other words, any guy off the street that you
23 hold up the headset he will say, well, it looks
24 similar.

25 MR. BRADLEY: Your Honor, I would like to object

2 to this particular exhibit. There has been no testimony
3 that the, what is represented on here to be that
4 Roanwell R-70 is in fact a very good replica of it and
5 I think that the shaping of it in some areas it may be
6 important to how close it is to the Hutchings design, really
7 are not terribly accurate. I have no objection to it
8 being admissible but I would like to point that out and
9 counsel presenting that is what it is, but there is
10 really no testimony to that effect.

11 I think it is not as accurate as it could be.

12 MR. ARNOLD: May it please the Court, this drawing
13 was made under the supervision of counsel. It was
14 presented on the first occasion and dimensionally checked,
15 found inaccurate, the draftsman was sent back and told
16 to make it totally dimensionally accurate.

17 I am unaware where there is a dimensional
18 inaccuracy if there be one so I will ask you, Mr. Mol, can
19 you identify a place where there is a dimensional inaccuracy
20 of the disclosure of the Roanwell R-70 on Exhibit 135-A?

21 THE COURT: I think it might be helpful if he
22 had the two units in his hands so he could compare them.

23 Q I show you a specimen of the Roanwell R-70 and,
24 of course, the scale is different on the large blown up
25 drawing but are you able to identify any place where you

2 feel that there is an erroneous representation on the
3 Roanwell R-70, the story being, of course, that we tried to
4 discipline our draftsman, whether we could, to copy those
5 dimensions precisely to the last millimeter to scale.

6 A Well, it is hard to visualize, but the first
7 thing I think that you have done on the representation is
8 tilted the whole headset more vertical in comparison to
9 the Hutchings headset.

10 I think if you take both of them side by side
11 suspending it from the fulcrum point, I think you will
12 get a somewhat different picture.

13 Q Your point is that you feel like that one of them
14 should be turned -- which would you feel?

15 A I think you have tilted it more vertically than
16 it really is. I think the capsule in general is much
17 lower than you have shown it there and essentially, for
18 instance, the plane of the connector is well off
19 vertical and you have shown it in vertical.

20 THE COURT: I have to say in all candor, Mr.
21 Arnold, that struck me when I saw this sketch for the first
22 time because I had not pictured them as being in the
23 identical orientation when actually mounted on the ear
24 and they are shown here as having the exact orientation.

25 MR. ARNOLD: I think the criticism is quite
proper. As hung on the ear, the R-70 would be twisted

2 somewhat clockwise from the position in Exhibit 135-A.

3 Q Is there any other point of error in the position
4 or the dimensioning of the drawing of the Roanwell R-70 in
5 Exhibit 135-A?

6 A Yes, I think there is a shaping up here near
7 the connector, how do you say, the double bump affair that
8 is not reflected on here. You are asking me to make an
9 interpretation of how accurately in art work this represents
10 this and to me, and I am not the average layman, that is
11 not an accurate representation, but I've worked for this
12 device for four years.

13 I think it is very hard for me to make that
14 judgment. I can see definite differences in the shape that
15 are not reflected. They are all minute but the sum total
16 makes one look much like the other.

17 Q Let's address our attention, then, to the
18 physical unit in your hand, disregarding Exhibit 135.

19 A Yes, sir.

20 Q Insofar as the Roanwell R-70 is concerned --
21 let's go back to this. These drawings of the Hutchings
22 device are taken from -- well, they are not taken from the
23 patent either because the tube is turned around in the
24 patent drawing. No, in the design patent -- I will show you
25 a copy of the design patent 218,178 that has been issued to

Mr. Hutchings and show you the patent -- the drawings then as they appear in the patent. They, your Honor, are Exhibit 3 in the plaintiff's large green -- I believe yours is the green notebook of exhibits.

I will ask you with reference to the design patent drawing and to the unit in your hand, recognizing that line drawings are imperfect representations of three-dimensional objects, do you feel that the layman would regard the structure in your hand, the R-70, to be highly similar to the patent drawing that is in front of you, much more so at least than any of the Unex sketches appearing on page 68?

A Oh, yes. I don't think I could argue with that. There is a higher degree of similarity than between what is shown here.

Q While you have the unit here, may I ask you to don the unit in its completeness. Would you put it on, please. And leave it on and use the clothes clip.

A There is an ear hook that goes with this if you have it.

Q And now will you attach the clothes clip.

THE COURT: This is the Roanwell unit?

MR. ARNOLD: Yes, sir.

A Yes, sir.

Q What is the purpose of that clothes clip?

A To hold the cord.

Q And thereby to relieve what? To hold the cord but why do we need to hold the cord?

A To reduce the amount of torque on the headset that causes it to come off. The largest unstabilizing factor on the headset is the weight of the cord so you are trying to minimize that as best as you can.

Q Where did you get the design of that clothes clip that appears on the R70?

MR. BRADLE': Your Honor, I object. This is not involved in this suit. The plaintiff has the patent on the clothes clip and it is not involved in this suit.

MR. ARNOLD: Your Honor, the purpose of this question and its relevance to this suit is that it shows the very deliberate intent to copy the unit from top to bottom, this clothes clip, it is my effort to prove, was copied down to the last detail directly from the Plantronics unit and regardless of the independent patent on the clothes clip, as to which we have had another issue that has been resolved, I think, the point here is to show deliberate intent to copy the whole market element.

THE COURT: I think it is relevant for that purpose.

Q I will repeat the question. Where did you get the design of the clothes clip?

A We got it from a PPI unit.

Q And copied it very closely, did you not?

A Yes, sir.

Q How closely would you say?

A As close as we were able to.

Q Now I address your attention to Page 69, which is another page of the initial Unex report to Plantronics

entitled design problems. I notice that at this stage, after they have had the disclosure from Roanwell of various things and ideas, presumably at least including the disclosure of the Plantronics brochure material, they still have a list of design problems including -- what is the first design problem?

A The best location on the ear.

Q What is the second one?

A The best size and shape with existing parts.

Q And what is the third one?

A The best wearing comfort and security.

Q By security, I take it that is another word in this application for stability in terms of holding the boom in the -- the tube in the right location?

A Right.

Q Then the next reference is positive cavity seal. We haven't mentioned that earlier, but what is the significance of a positive cavity seal?

A I think the cavity they are referring to is basically the ear canal and with an ear tip type of unit, it is fairly important to get the ear tip to seal well in the canal.

Q And the proper sealing of the ear tip in the canal is relevant, among other things, to exclusion of

1 zb-3 Mol-direct

2 ambient noise?

3 A I think that has very little to do with it, sir.

4 Q All right, I address your attention next to
5 Topic 8, "swivel versus formable input tube." Can you
6 explain to us what that controversy is that is still
7 a problem to them?

8 A Well, first I don't know if it is a controversy.
9 It merely lists two ways in which he can get a microphone
10 tube position to swivel is very similar to the 61A headset
11 which we were producing. A formable input tube is similar,
12 let's say to your MS50, which you can form with some degree
13 of difficulty.

14 THE COURT: Off the record.

15 (Discussion off the record.)

16 THE COURT: Back on the record.

17 Q I now address your attention to the drawing on
18 Page 70 and ask you what that is and what happened to that
19 alternative design that apparently received some considerable
20 attention.

21 A I think this was strictly a layout on the part
22 of Unex. Part of their assignment was to investigate
23 different ways of meeting the end objectives and they sug-
24 gested we might consider a tubular type of housing. As best
25 as I recall, the only thing that was ever done with it was

1 a wooden model made of roughly the dimensions that they
2 had envisioned. No working model was ever made and I
3 don't think was ever contemplated.
4

5 Q All right, directing attention to the date, just
6 to get us back in time frame, this drawing was drawn October
7 2, 1969, as it appears in the lower right-hand corner, cor-
8 rect?

9 A Yes.

10 Q I direct your attention next to the next day's
11 drawing, October 3, which appears on Page 71, and I will
12 ask you whatever happened to that design?

13 A Well, I think that design is a modification or
14 an amplification in certain design details that were sort of
15 shown in Fig. 2 and 3, the one we talked about previously.

16 Q In your layout 2 and 3 --

17 A Yes, it shows a little bit more of the details
18 than the original layout.

19 Q All right, this again, then, has the mouth tube
20 coming out the bottom?

21 A Yes.

22 Q I direct your attention next to -- well, we
23 skip a couple pages, I suppose, and get onto Page 74, and
24 I will ask you what is the document that appears on Page 74
25 commences on that page?

zb-5

Mol-direct

1 A Well, that appears to be the report that Unex
2 gave us, the second report. I don't remember whether we
3 had a regular meeting date but it certainly took place
4 about every wekk, every two weeks, and they would submit a
5 report. We would talk on the telephone and every so often
6 if for no other reason than to get their bill paid, they
7 wrote a little report as to what had been accomplished.
8

9 MR. ARNOLD: It is relevant, your Honor,
10 to enter into the record at this point the stipulation of
11 the date of the USITA show as being October 19 to 22 of
12 the year 1969. The first day of that show was on October
13 19.

14 MR. BRADLEY: Agreed.

15 Q What is the date of this report? I guess I
16 can read it as well as you can. Right under the signature
17 it says October 21, 1969, does it not?

18 A Yes.

19 Q Before going further into this report, let me
20 ask you another question. How much of the headset design
21 problem is in the human by contrast with the technical engi-
22 neering problem? Do you understand the contrast I am
23 setting up there?

24 A Yes. It is a little bit too black and white.
25 There are engineering problems which are fairly straight-

zb-6

Mol-direct

forward, but nevertheless need some careful solution.

A very significant portion of the design includes the human factors certainly.

Q This particular company Unex, they were quite experience d in the hearing aid market heretofore, were the not?

A They manufactured hearing aids. They had been in the market for some period of time. My understanding was they were a very small, very small factor in the hearing aid market, but they certainly were more familiar with it than we were, yes.

Q And one of the reasons they were selected for the job was because, having experience with hearing aids, they should have had some of the background on the human engineering problems already worked out or at least a good judgment capacity on the human engineering part of the problem, is that right?

A No, I don't think that was any real significant factor in that decision, sir.

Q Well, is it not a fact that you did expect them to have and do now believe that they had some significant experience and judgment value in connection with the human engineering factor owing to their experience in the hearing aid market?

zb-7

Mol-direct

1 A No,sir, I don't think we considered them
2
3 thoroughly experienced in human factors. I think we very
4 strongly felt that neither they nor us were very experienced
5 in it, but that it was a problem that the two groups could
6 solve.

7 When we decided to go to Unex, we knew that our
8 human factors problem would be a different one than had
9 existed in the hearing aid industry. We would not have a
10 hearing aid case thickness.

11 THE COURT: You would have a thicker case?

12 THE WITNESS: I would have a thicker case.

13 THE COURT: And although you knew that there had
14 been hearing aids that mounted on the ear and had been fully
15 supported by the ear, you thought that you had a different
16 problem when you were talking about one of these headsets
17 which includes both the microphone and the earphone --

18 THE WITNESS: Yes, but in addition to that I knew
19- with the two transducers I had to put in there, I couldn't
20 get the case thin enough to put it in the same location that
21 it was designed to be put, so I wouldn't totally discount
22 Unex' experience, but they certainly were not any signifi-
23 cant factor in the selection.

24 End 2B
25

2 BY MR. ARNOLD:

3 Q The last sentence of the first paragraph appear
4 ing on Page 74 of the Unex report says, "However a few
5 hours were spent on further details on the original sketches
6 to check feasibility and clarify design possibilities."

7 In that context, is it fair to say if they were
8 still checking feasibility that means that as of 10/21/69
9 they were not totally convinced as to the feasibility of an
10 particular design?

11 A Well, sir, what I take the word "feasibility" to
12 mean in this context is the feasibility of the details, the
13 method of attachment of the cord, can the clip fit, can
14 we make a wall this thick. Until you literally have
15 a final unit, you are establishing feasibility to the very
16 last minute, but feasibility of detail, not the basic conce

17 Q Then I address your attention to the first
18 sentence of the second paragraph:

19 "In response to your initial reaction to our
20 first report, I did additional general design and sketches
21 on the possibilities of an over-the-ear voice tube as sug-
22 gested by your sales department."

23 Now, I construe that as the request that I belie
24 Mr. Foley referred to as the me-too request. Is that a
25 fair construction?

gwb-2

Mol-direct

1 A Well, over simplified, yes, but the sales depart-
2 ment, as any sales department, would love to have a me-too,
3 a carbon copy, so that they don't have any problem selling
4 the thing. This I think is true in the industry throughout.
5

6 I think the request that came here as suggested
7 by the sales department, as best I recollect, the marketing
8 manager, Mr. Clark, who is an engineer and understands the
9 oversimplification of just building a me-too, came to me
10 and pointed out that there would be certainly an advantage
11 to him if he could offer more than one design to a customer
12 if that customer wanted it, and he asked us to explore whether
13 or not we could expedite the over-the-ear design because
14 he was quite anxious to get that on the market place, if
15 he could.

16 Q In all of the documents that have been produced
17 in this case, and we have made a very diligent effort, and
18 your company has, to locate them all, this is the first
19 writing, as I know about it and have been able to find it,
20 this is the first writing where anybody interested in design
21 work as distinguished from that marketing department bro-
22 chure, or whatever it was, that was shown at the USITA show
23 in a picture, the wooden mockup picture, but this is the
24 first drawing out of engineering, in any way associated
25 with engineering, that makes reference to an over-the-ear

gwb-3

Mol-direct

structure.

Are you able to suggest to me any error in that conclusion which I have reached by my most careful search that I knew how to make?

A I think your objection as to the detailed drawings and sketches you see is accurate. I think it is not accurate if you then make a conclusion that engineering had not thought of and was not pursuing an over-the-ear design from a long-range standpoint.

Q Whether engineering had thought of it -- I certainly have no way of saying what they did or had not thought of -- but if they were pursuing the over-the-ear design, would there not have been at least some drawings somewhere that revealed that when we have turned up all of these various drawings of under-the-ear design? Can't we really say they were not pursuing it until now?

A No, I don't agree with that. I think the over-the-ear is a fairly obvious alternative to any of the other. There are really only three basic ways one can put a transducer if you have a microphone and a receiver -- well, there are four ways. You can get one tube over the bottom and one tube over the top, and there are two ways to do that, or you can get two tubes over the top and two tubes under the bottom.

gwb-4

Mol-direct

1 If you try to make a miniature headset where
2 you try to make all the components do double duty, you
3 would never put the two tubes on the bottom of the ear, be-
4 cause then you would need another supporting structure.

5 So that is one of the four that really doesn't
6 make sense. The other three left are both tubes over the
7 ear, which was well-known at the time in the hearing aid
8 industry, or, if you want to call it, the speech tube
9 over the ear or under the ear. There were really three basic
10 solutions. But we weren't trying to write down those three
11 alternatives, we were more worried about the packaging and
12 the location of the transducer package and how to attach it
13 than an over or under the ear version.

14 That did not seem terribly significant to me.
15 The size and the shape of the capsule is the thing that
16 gave us our trouble.

17 Q Then we have the last sentence: "A survey
18 of operator reactions to various models should probably be
19 done before too much detail drawing is attempted."

20 I relate that back to the comment we had earlier
21 about the fact that human engineering still does remain
22 a problem as of the date of October 21. Does it not?

23 A It was a problem, yes.

24 Q Let's skip on, then, and get over to Page 77 in
25

gwb-5

Mol-direct

the exhibit, which is another drawing of that same Unex report.

Is this still another sketch showing the mouth tube coming in the bottom and the ear tube coming out the top?

A Yes.

Q On Page 78, another page of that same Unex report, wherein the marketing department of Roanwell had requested over the ear, we finally find the first pictures of the over-the-ear sketch. I will address your attention first however, to Sketch A. Let's go back to the title. The title says "over ear output tubes" and "high vs. low unit mounting."

Apparently that is the study being made on this page.

MR. BRADLEY: I object to counsel's characterization as marketing requests. I don't know whether marketing made the request before the date of this drawing or not.

THE COURT: Apparently we saw on Page 74 that the sales department had suggested sketches and consideration of an over-the-ear location for the voice tube and I guess that is what he is referring to.

MR. ARNOLD: Yes, sir. I see the point Mr. Bradley is making. It is entirely conceivable. The

App. 543

1 gwb-6

Mol-direct

2 drawing itself being dated 10/14 and the letter transmitting
3 the drawing being dated 10/21, we don't know which date
4 prior to 10/21 the request came in.

5 THE COURT: I see.

6 MR. ARNOLD: So whatever the point is in that,
7 we leave it to your Honor to judge.

8 MR. BRADLEY: On the other hand, I will accept
9 counsel's indication that it probably is a result of that
10 request. I wanted to point out the record really isn't
11 clear on that point.

12 MR. ARNOLD: You are entirely correct.

13 Q Now let's get back to Page 78. In Exhibit A I
14 direct your attention to the location of the center of pivot
15 support or center of support of the weight of the whole
16 unit and ask you where that is. Is that not right at the
17 top of the ear? It is not shown there, but we know that
18 the support point is right at the top of the ear, the primary
19 support is at the top of the ear, is that not correct?

20 THE COURT: Which of the sketches?

21 MR. ARNOLD: Sketch A on Page 78 is the one I am
22 addressing myself to.

23 A Let's say it is on the ear.

24 End 3A

25

1 3b am qwrfl 1 Mol-direct

2 Q The support is primarily the top of the ear? The
3 vertical support I am addressing myself to.

4 A If I drape a rope over a round rod, the support
5 is not at the top of the rod, it is the rod in its entirety.

6 THE COURT: It is on the top half of the rod?

7 THE WITNESS: Certainly it is on the top half of
8 the rod, but Mr. Arnold is telling me the support is
9 exactly at the top. It is a support element shaped by the
10 ear.

11 THE COURT: It isn't supported by the bottom of
12 the ear?

13 THE WITNESS: No.

14 Q Now the point, and that is part of the relevance
15 because we get to some that are supported by the bottom of
16 the ear in a minute, but this one is not supported by the
17 bottom of the ear?

18 A That is true.

19 Q Where is the approximate center of gravity of
20 the whole unit in Exhibit A? Is it beneath the support of
21 the unit on top of the ear more or less in line with the
22 support axis?

23 A Yes, it is more or less vertically below the
24 support, center of support.

25 Q And in this arrangement where you have the

1 qwrf 2

Mol-direct

2 center of gravity of the whole unit more or less below the
3 center of support, you also have it removed from the pivot
4 axis away from the head by the full length of the ear or
5 essentially the full vertical length of the ear, do you not?

6 THE COURT: I get your point. The answer is yes.

7 Q It says on Exhibit A, the commentary on it:

8 "Good security, easy mounting, good input position
9 and adjustment."

10 Let's go then to drawing B and see what the
11 comments are there.

12 First we find again that the support in
13 drawing B as shown there is substantially the area on top
14 of the ear and the center of gravity virtually is in alignment
15 below the ear. In that regard we have the center of mass
16 that is going to tend to cause instability far removed from
17 the pivot on the support point, is that correct?

18 A The center of mass is far removed from dead center
19 support point.

20 Q But the tube that extends from the top of the
21 ear comes from essentially the support point, the mouth
22 tube?

23 A Well, it is part of the whole structure. It
24 doesn't come from there. It certainly goes through there.

25 Q I think I need not comment on it further. Let's

1 gwrf 3 Mol-direct

2 read the notation:

3 "More awkward output mounting."

4 What is meant by "More awkward output mounting," w
5 we put the tube on the top of the ear?

6 A I would guess they are referring to this 180
7 degree turn of the output nipple, the receiver nipple.
8 You have to come from here and come around. It is a little
9 bit more awkward.

10 Q In that arrangement, as shown in that sketch --
11 we evolve to something shortly after this, but as shown in
12 this sketch there is no convenient way to make the boom itself
13 flexible so that it can be moved around to be positioned
14 near the mouth because the tube is shown here going clear
15 around behind it here half way down.

16 A That's possible although this sketch certainly
17 doesn't indicate or necessarily imply that that tube is one
18 continuous tube of the identical material.

19 It could very well have been a section, a solid
20 section, within a flexible section attached. I don't
21 think we can draw an inference from this particular
22 sketch.

23 Q A fair enough statement. Which voice tube is longer
24 the total distance from the mouth to the microphone trans-
25 ducer and by roughly how many inches, rough order of

1 gwrf 4 Mol-direct

2 magnitude?

3 A I would guess the over-the-ear version is slightly
4 longer and maybe by, at the most, an inch.

5 Q I would address your attention, if I may --

6 MR. ARNOLD: And perhaps if your Honor would
7 look at the same drawing while I focus attention.

8 Q -- if the mouth tube came straight, I am looking
9 at Exhibit B, came straight in the near horizontal position
10 to the bottom of the housing, it would cut off at about this
11 point, which I mark on your copy of the exhibit -- well, I
12 have not marked it very well. Let's mark a little
13 further -- it would meet the housing after about this
14 distance that is right under the position of the letter B,
15 is that not correct?

16 A Well, yes, but you are taking a sketch that is
17 not to scale and scaling off.

18 Q Compared to sketch A, where the housing is posi-
19 tioned below the ear, and sketch B, where the housing
20 is in the same position, as a rough order of magnitude,
21 we know sketches are rough, but as a rough order of
22 magnitude, would you not expect the mouth tube to be cut
23 off at about the position I have indicated on this
24 drawing?

25 A On my head -- I don't want to belabor this, but

1 gwrf 5 Mol-direct

2 if I swing from the thumb here, from the bottom to the
3 top, the difference between that section is the portion
4 that goes over the ear until it enters the capsul. That
5 is, I think, the additional length.

6 Q So the additional length --

7 A I think it is an inch. If you want to say two inches
8 be my guest. I don't think it is significant at all.

9 Q The point is it is a dimension that measures from
10 approximately the middle of the back of the ear all the way
11 over the top of the ear and back down to roughly the
12 middle of the front of the ear.

13 Whatever that is there is that much extra length
14 added on to the voice tube?

15 A No, I think you are going much further than I would
16 be willing to. If you want to point out it is longer, it is
17 longer.

18 THE COURT: If you begin with the assumption you
19 are going to have an under-the-ear mounting, then obviously

20 THE WITNESS: It is longer.

21 THE COURT: -- if you have on the one hand the voice
22 tube extending from a point just about opposite the bottom
23 of the ear to the mouth as compared to extending over the
24 top of the ear and then around the back of the ear to the
25 top of the under-the-ear mount, you have got a length almost

1 gwrf 6 Mol-direct

2 twice as great. But that assumes that you start with an
3 under-the-ear mounting.

4 THE WITNESS: That's true. I wouldn't agree with
5 your Honor on twice as long.

6 THE COURT: I am just looking at the sketch
7 here.

8 THE WITNESS: The sketch is not to scale. If you
9 put it on the human head it turns out to be a little
10 different. If counsel wants to clarify that the over-the-
11 ear tube is longer, I accept it, it is longer. I would call
12 it roughly an inch. I think we can probably measure on
13 the two headsets we do have how much longer it is.

14 Q Let's proceed, if we may, then, to this point:

15 If it is an inch longer, your suggestion, at the
16 3000 cycle range which is very important to human understand-
17 ing, the upper limit of what is important to voice under-
18 standing, about how many db additional loss would you
19 expect to experience if you had that tube an extra inch
20 longer in the one than in the other?

21 A Well, I think it is an oversimplification, sir,
22 which you are relating to a probe tube. The effect of
23 the voice tube that we have gives him resonances which
24 either are disadvantages or can be used to advantage and
25 you can change diameters and lengths accordingly

App. 550

2 O All right. Let me pursue my question, if I may.

3 I recognize that there is a difference between
4 the R-70 and the R-71 on the one hand and the diagrams,
5 the proposals or sketches of No. A and B on the other.
6 Because in A and B the transducer housings are slung much
7 lower than on the R-70 and 71.

8 A There are exaggerations indicating a concept.

9 O You call them exaggerations but it seems to me that
10 there is a logical reason for hanging in there because they
11 are in the line of the center of gravity -- I mean the
12 center of gravity is thereby placed immediately below the
13 support means for an obvious effort at stability.

14 So, well, let's pass that and go on to the next
15 point.

16 A Well, sir. You made an assumption which I think
17 may lead to an erroneous impression. You said that the
18 low slung feature was there in order to get it below the
19 center of gravity. That is totally wrong. The reason
20 for the low slung feature is that with our particular headset
21 and our transducers, we had a fairly thick case, as I have
22 explained I think three times before.

23 In order to get a comfortable fit, we found out
24 that the human ear up here tends to be fairly narrow.
25 Down below it gets much wider and consequently, since

2 you can't put an oversized unit in a narrow ear, you want
3 to go low slung. The question is how low slung do you want
4 it and how low slung will it be comfortable on the ear. The
5 location of that capsule at the time we were working on it
6 had absolutely no bearing directly on stability and center
7 of gravity. Obviously it was in the back of my mind.
8 Let me not say we totally disregarded it but the low slung
9 versus medium slung was frankly more initial valuation
10 as to what tradeoffs there are versus the comfort level,
11 okay?

12 Q I understand your point and I am happy to accept
13 your correction. In order that we get on I address
14 your attention to C and D, drawings C and D. On the same
15 sketch and I know in both of those instances you are ex-
16 perimenting with a high slung unit rather than a low slung
17 one and in this instance the center of gravity is closer to
18 the pivot point but not in vertical alignment with the
19 support.

20 Is that a fair characterization of those
21 two alternatives?

22 A When you say we are experimenting, we have re-
23 flected two other approaches. Experimenting with to me denotes
24 that you are hanging things --

25 Q I accept your correction. Experiment is a wrong

2 word. Sketching ideas.

3 A Sketching ideas.

4 Q There is a criticism noted here, though. In
5 Exhibit C, which is -- I mean sketch C, which is over-the-
6 ear, similar to B except more glasses interference. My
7 point, then, is that B had a difficulty because it had a
8 more awkward mounting. B had a difficulty because it had
9 at least some other length of tube and decibel loss, whatever
10 that might be, and we don't -- your suggestion is that is
11 a minor matter.

12 I would think it is a major one but we will come
13 back to that one later.

14 C, in the alternative, provides glasses inter-
15 ference so there are reasons to not use either B or C that are
16 set forth on this page, is that correct?

17 A That is correct.

18 Q Now I address your attention to the next page,
19 79, and this page is sketched by the best of my reading of
20 that handwriting on the same day as the one before, 10/14/69,
21 and here we have another over-the-ear mount.

22 We have in E and in F, we have an earlob supported
23 unit with spring tension shown indicating by arrows there,
24 the upper arrow is really clear. The lower arrow is not
25 so clear. Indicating where the clamping is to be, I believe.

2 Would you explain the structure indicated there
3 to the Court?

4 A I'm not sure I can. I think I have spent more
5 time looking at it now than I did then.

6 As near as I can tell, it is some sort of a
7 device that clips on to the earlob.

8 THE COURT: It is referred to as tension but
9 obviously it is compression judging from the arrows.

10 Q They are trying to pinch the earlobe because other-
11 wise it would slide off --

12 THE COURT: Not the lobe but a part of the
13 auricle.

14 MR. ARNOLD: Yes.

15 Q In G we also have another lobe-hanging device
16 and there is recited there a difficulty or a notation --
17 I won't characterize it -- on the right-hand side, right
18 and left lobe adapter.

19 What is the significance of that recitation? If
20 you hang it from the earlobe, does that mean you have to
21 have a special different adapter to hang it on the right-
22 hand side versus the left-hand side?

23 A I suspect that is what it meant, yes.

24 Q So we are considering these earlobe hangings on
25 this date of October 14th and we find that there is a

1 difficulty because we -- it is not versatile from left
2 to right. What is this significance of pinching the auricle,
3 do you think that would be comfortable after eight hours of
4 wearing?
5

6 A Ouch.

7 Q Let's go back upstairs to E. In the E location we
8 are apparently trying to address, or the sketcher is
9 apparently trying to address himself to a fear that with
10 the over-the-ear location with the input tube and the hang-
11 ing of the transducer housing low enough to be out of the
12 way of glasses and the like and where the ear is big,
13 that he is going to have instability because he provides
14 for what he calls tension there and the two arrows so he
15 is evidently planning to pinch the auricle to provide
16 extra stability in that drawing when he is considering
17 the over-the-ear input tube, is that not correct?

18 A When he is considering this version, which is a
19 very low slung version.

20 Q Now I address your attention to the next page
21 80. Here we have a disclosure of an under-the-ear
22 arrangement which is beginning to get fairly close
23 like what the R-71 turned into excepting for the ornamental
24 design approach. Is it not a fairly close recitation of
25 the structural concept of the R-71?

App. 556

1 A Gee, the way this looks, it looks to me like the
2 circular capsules, the two circular transducers are oriented
3 differently and the capsule housing is a round capsule
4 housing with the tube, the axes of the two transducers in
5 line. I don't think this is ornamental. I think this is very
6 fundamental.
7

8 Q In all events in that instance you had a sliding
9 voice tube at the bottom that is mounted to the bottom of
10 the housing just as in the R-71, which I hold up before you.
11 You have an adjustable length ear tube on the top and that
12 adjustable length ear tube on the top hangs over the top of
13 the ear, derives support from the top of the ear, the ear
14 tube having an ordinary plug to stick into the ear.
15

16 The center of gravity and weight location of the
17 housing is in that drawing essentially or roughly in the
18 same place that it is on the ultimate R-70? Isn't that much
19 correct?
20

21 A You said so many things I am not sure I followed
22 it. Yes, it is an under-the-ear. It uses the 61-A
23 speech tube and it uses a soft tip. Is that a complete
24 answer?
25

 Q And we have an adjustable length voice tube that
 swivels and we have an adjustable length ear tube on the top?

 A Yes, of course the adjustable speech tube is

2 common with both and it is a Western Electric 61-A
3 speech tube.

4 Q I am trying to develop the evolution towards the
5 unit R-71 insofar as this drawing covers it and it strikes
6 me that the fundamental difference is that the transducers
7 were turned around from fitting in the circular housing to
8 being flattened out, the difference between the drawing of
9 page 80 and the actual R-70, that was a fundamental differ-
10 ence?

11 A Yes, but I think sketches on pages 77, et cetera,
12 much more reflect the final product as No. 80. I can't
13 agree with you that No. 80 is close to the final product.
14 I think No. 77 that you pointed out to me previously clearly
15 has an ear hook with a plastic, the circle is the flexible
16 duct. The speech tube, although not shown, I think
17 can be demonstrated was intended to be and is in fact the
18 61-A speech tube exactly as it was at that point and
19 slid into its housing so there is no point in showing the
20 speech tube.

21 Q As to the sketch on page 77, I will accept that
22 the speech tube, though not shown to be extendable in
23 the manner here, that that was in contemplation but I
24 do not get in page 77 the indication that the hook over the
25 top of the ear is going to be adjustable in length to

accommodate different size ears. I don't get that out of
page 77.

I do get that out of page 80.

A Okav. I agree with that.

O You will notice there is a difference in date
by two days between the one without the adjustable top is
another one of these dated -- from my conv I can't read
that date. Can you read the date on your conv?

THE COURT: I can't either.

1 Q The date of Page 77. I can't tell whether
2
3 it is the 14th or 15th.

4 Well, in all events we need not worry about that
5 detail. Maybe we can check it on an original somewhere
6 else. At least by the 16th, by the time we get to Page 80.
7 On Page 80 we have the sliding adjustment feature shown
8 there. Should be adjusted, I am reading another note, "should
9 be adjusted snug under ear lobe for secure positioning of
10 voice input tube. So here we are showing an intention to
11 find a snugness under the ear for purposes of holding
12 the voice input tube in good position.

13 Mr. Bradley has addressed my attention to the
14 fact that the Page 77 drawing on the original is clearly
15 dated 10/15/69, which is one day prior to the Page 80 draw-
16 ing.

17 Let's go on to 81 hastily. We are still working
18 on these units and we have a sheet titled "Dummy fitting unit
19 for cartridge type." And there we illustrate a different
20 way of getting the adjustability in the length of the hook
21 over the top of the tube, is that not correct?

22 A Yes. It would appear that way.

23 Q Then Page 82, apparently it is still focused
24 in part on that problem as well as accommodating the eye-
25 glasses. It says adjusts for secure fit here, and that is

zb-2

Mol-direct

1 in the hook that goes over the top of the ear and good for
2 eyeglasses. We still have basically the same subject matter
3 of the two previous pages but, as we progress from 81 to 82
4 to 83, the housing is moved gradually upward in those three
5 sheets, is that a fair statement?
6

7 A Yes, it would appear that way.

8 Q When we get the housing up to the high position
9 of 83 we find a question mark there. "Need for adjustment?
10 As though maybe if we get it up high enough we don't have to
11 have an adjustment there. Is that not correct?

12 A Well, the reason -- it is the chicken and the
13 egg situation. The reason we needed the adjustment or
14 were evaluating the adjustment in our analysis was that
15 the human -- every human ear is as different as the finger-
16 print. That there is -- there are no two operators who have
17 the identical back of the ear shape whatsoever. And that
18 rather than have a fixed shape capsule, if you wanted the
19 ultimate in comfort, you would like to have the maximum amount
20 of adjustability. And in fact our instructions to operators
21 were that the first thing to do for them is to locate the
22 capsule in the optimum place to their feel behind the
23 ear and then adjust the ear hook to the proper length to
24 support that in the location that they most favored.

25 Now, once you go all the way to the top again

zb-3

Mol-direct

1 you have eliminated that feature of hanging it in the lower
2 canal and again, you don't have to adjust it. It is two
3 different approaches to the problem.
4

5 Q All right, and simplicity is always a desirable
6 part of any design if you can get simplicity without
7 too great a sacrifice of other tradeoffs, is that right?

8 A If you can get simplicity without too great a
9 tradeoff, whatever that might be, yes, it is desirable.

10 Q In the Hutchings design and in the Roanwell R70,
11 we accomplished the simplicity of not having to have that
12 extra adjustability at the upper end. whereas in the under
13 the ear version of your R71, you do still have that extra
14 complexity and adjustability, is that not correct?

15 A That is correct, with the penalty of having a less
16 comfortable unit for many operators.

17 Q Now, Page 84, we have there another sketch that
18 says good for eyeglasses, but we are still back on the problem
19 of the long input tube. It says "Long input tube, no
20 chance for swivel adjustment of input end."

21 Apparently at this stage Unex still hadn't
22 figured how they were going to get the boom to adjust on
23 the input end if they were going over the ear, isn't that
24 the implication of that recitation?

25 A Yes, I think that is what that drawing meant.

zb-4

Mol-direct

1 Q All right. Then we turn to Page 85. Again
2 we have the recitation, no chance for swivel adjustment
3 of input tube. In addition to the notation, probably
4 glasses. In addition to the notation down at the bottom
5 and of course now we have the flattened one. We have taken
6 the rounded one and we are working with a flattened one, is
7 that correct?
8

9 A That's correct.

10 Q Even with the flat one, though, we say bulky
11 for small type women's ears. So we are still seeing problems
12 with getting high on the ear and over the top of the ear with
13 the voice tube, correct?

14 A Yes, sir.

15 Q Then Page 86, we think well, gee whiz, we have
16 problems but after all let's put both tubes over the top.
17 that what 86 represents?

18 A Yes.

19 Q If we have both tubes over the top and as shown
20 here, nothing securing to the bottom of the ear at all,
21 then you end up with an instability problem, do you not?

22 A Depending on which operator, sir. I think the
23 over-the-ear headset fits a large percentage of the
24 population, but not as large a percentage of the population
25 as the under the ear -- no, I wouldn't say this is obviously

zb-5

Mol-direct

unstable. If it were, then the Hutchings headset would be unstable.

Q All right. We will come back to that in just a minute and let's skip now then to Page 95, which is a shipping ticket, I would call it, although I believe in your deposition it was called an invoice.

In all events it reveals the shipment --excuse me. Let's address 94 in the first instance. 94. It is addressed to a date shipped 11/18/69 of a series 70 headset upon which there had been scribbled in that 70 really refers to the R71.

Is that not correct?

A This is Page 94?

Q Page 94. My Xerox copy is a Xerox of a Xerox and that reference to 71 doesn't appear very good, but somebody had scribbled in on the copy delivered to us the reference that what this really was, it might have been a Series 70, but it was the Model 71. I believe you verified that for us in your deposition.

A Yes.

MR. BRADLEY: We so stipulate.

MR. ARNOLD: You so stipulate, all right.

Q Then on Page 95 we have the comparable shipping ticket for the first unit that was an over-the-ear input unit

zb-6

Mol-direct

There is true Model 70, was shipped 12/6/69.

MR. ARNOLD: Your Honor, we have had a difficulty on this particular subject matter. During the deposition of Mr. Mo. we had produced for us these two units covered by these shipping tickets, which were tested at Roanwell, and immediately submitted to Bell Telephone for their evaluation. And the stipulation at the conclusion of the deposition was that the physical specimens would be left in custody of counsel for defendants since they owned them.

Unfortunately, they have been lost and misplaced. We do not have them. I was terribly desirous we have them for this stage, but fortunately we do have polaroid camera pictures that counsel retained, so I would offer in evidence Plaintiff's Exhibit 143 and 144, which are the pictures that counsel for defendant had been able to provide us of the first two units that were delivered under those two tickets.

MR. BRADLEY: Your Honor, I would like to speak to that.

THE COURT: All right.

MR. BRADLEY: It was my understanding that the models had been taken by the plaintiff and if they were in fact kept by us, I am sure counsel has checked, then I am sure we still have them. But if we were asked to

zb-7

Mol-direct

1 have them ready for trial here, it was a misunderstanding.
2
3 I didn't know that. We did go back last night and get out
4 these photographs of them, but I am sure we have the physical
5 models somewhere and if counsel wants, we can have someone
6 look for them today and I am sure we will have them before
7 the end of the trial.

8 MR. ARNOLD: Your Honor, I am sure it is a
9 matter of just accident. I don't mean to be charging any
10 deliberate wrong and if we can locate in anybody's office
11 those units, we will ask leave to substitute or to add them
12 to the record at such time as we can find them, whether that
13 is tomorrow or next month, if we may do so.

14 THE COURT: All right.

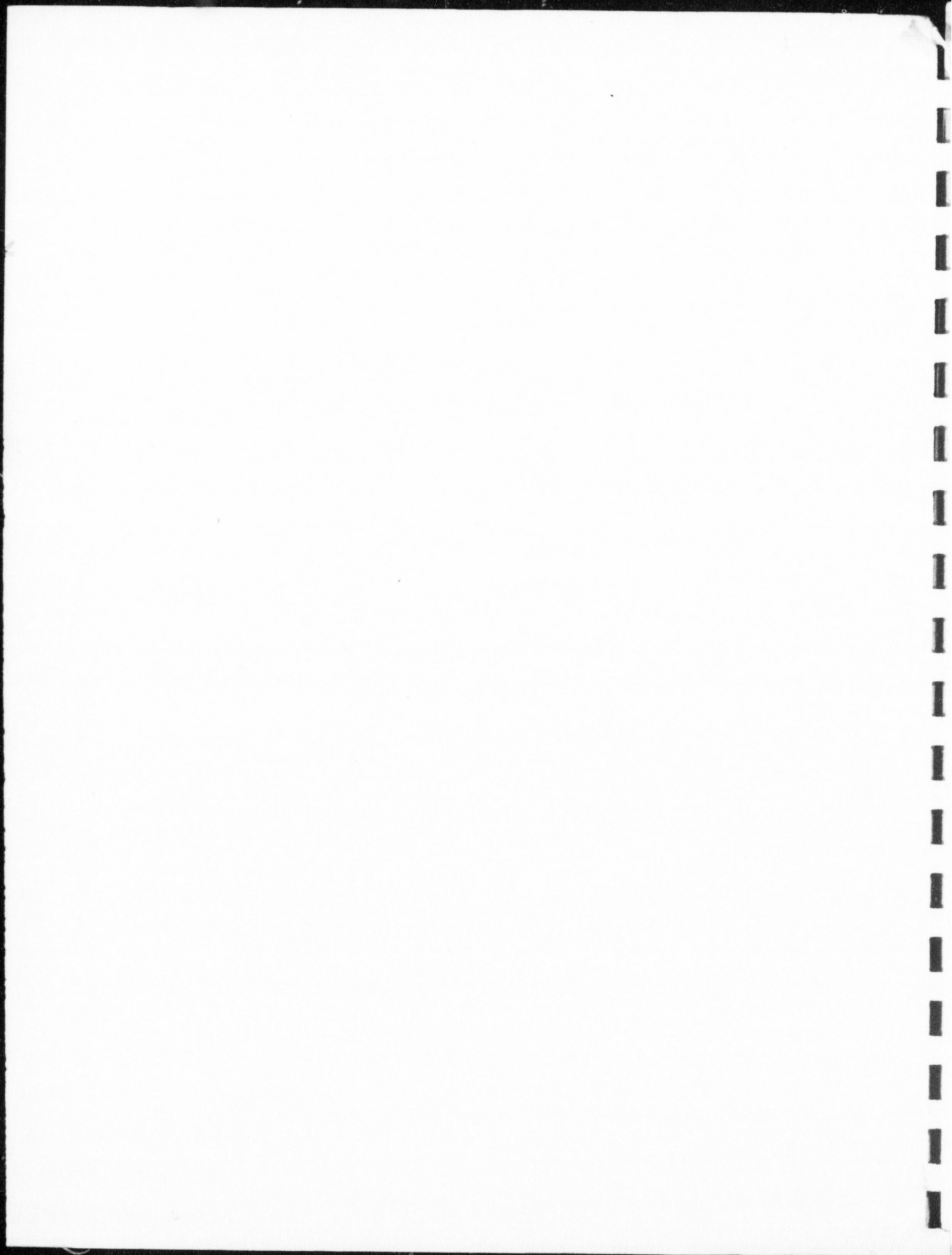
15 MR. ARNOLD: I believe, however, that the photo-
16 graphs will do for purposes of our present interrogation
17 so the loss isn't very bad as long as we have photographs.

18 MR. BRADLEY: I am sure if we have them, we can
19 locate them. There will be no problem.

20 Q Now I will address your attention, please, Mr.
21 Mol, to the Plaintiff's Exhibit 143. That is the model R71
22 as originally submitted to the Bell System for its approval,
23 is it not?

24 A To the best of my recollection, yes, that was
25 the model.

App. 565



Q All right, I address you more particularly to Plaintiff's Exhibit 144 and ask you whether or not that is the model 70 as originally submitted to the Bell System?

A Yes, I would guess -- it certainly looks exactly like it.

THE COURT: Is this a good place to take our morning break?

MR. ARNOLD: As good as any, your Honor.

THE COURT: All right, ten minutes.

(Recess.)